



LEED-ND

# LEED for Neighborhood Developments Rating System - Preliminary Draft September 6, 2005

Presented by the partnership of the Congress for the New Urbanism,  
the Natural Resources Defense Council and the U.S. Green Building Council



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## INTRODUCTION

### *Overview of LEED-ND*

The U.S. Green Building Council (USGBC), the Congress for the New Urbanism (CNU), and the Natural Resources Defense Council (NRDC)—three organizations that represent some of the nation’s leaders among progressive design professionals, builders, developers, and the environmental community—have come together to develop a national set of standards for neighborhood location and design based on the combined principles of smart growth, urbanism, and green building. The goal of this partnership is to establish these standards for assessing and rewarding environmentally superior development practices within the rating framework of the LEED® (Leadership in Energy and Environmental Design) Green Building Rating System.

Unlike other LEED products that focus primarily on green building practices, with relatively few credits regarding site selection, LEED for Neighborhood Development (LEED-ND) will place the emphasis on the elements that bring the buildings together into a neighborhood, and relate the neighborhood to its larger region and landscape. Our work is guided by sources such as the Smart Growth Network’s ten principles of smart growth, the Charter of the New Urbanism, other LEED rating systems, and other pertinent criteria. In short, LEED-ND will create a label, as well as guidelines for design and decision-making, to serve as an incentive for better location, design, and construction of new residential, commercial, and mixed developments.

The existing LEED rating system for new commercial construction has a proven track record of encouraging builders to utilize green building practices such as increasing energy and water efficiency and improving indoor air quality in buildings. It is our hope that LEED-ND will have a similarly positive effect to encourage developers and community leaders to revitalize existing urban areas, reduce land consumption, reduce automobile dependence, promote pedestrian activity, improve air quality, decrease polluted stormwater runoff, and build more livable, sustainable, enduring communities for people of all income levels.

### *Process and Timeline for Developing LEED-ND*

The LEED-ND Core Committee<sup>1</sup>—which consists of fifteen members selected by USGBC, CNU, and NRDC—does the day-to-day work of developing the rating system, but a second, larger corresponding committee is also established for every LEED product. In this way, a wider group of experts and interested parties can stay updated and provide feedback. **The LEED-ND Core Committee has completed its first full draft of the LEED-ND Rating System, which follows, and is actively soliciting comments from the LEED-ND Corresponding Committee regarding their work thus far.**

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<sup>1</sup> A complete list of LEED-ND Core Committee members can be found at the end of this document in Appendix B.

The comment period will run for 45 days in order to give sufficient time to comment. The LEED-ND Core Committee will then process your feedback and revise the draft into a pilot phase LEED-ND Rating System. The pilot phase will test the LEED-ND Rating System on the ground with a group of projects at various stages of planning and construction. An official call for pilot projects will be made to the LEED-ND Corresponding Committee, and the projects will be selected to reflect a diversity of project types. The pilot phase will last for approximately one year, after which further revisions will be made to the rating system, incorporating lessons learned during the pilot phase. Two public comment periods will then be held to solicit further feedback before the final approval and balloting processes take place.

### What is a “Neighborhood Development”?

The LEED-ND Core Committee intends for LEED-ND to be used to certify exemplary development projects that perform well in terms of smart growth, urbanism, and green building, and may constitute whole neighborhoods, fractions of neighborhoods, or multiple neighborhoods. Smaller, infill projects that may be just a single use, but complement existing neighboring uses, for instance, should be able to earn certification as well as larger mixed use developments. For the time being, the LEED-ND Core Committee has put no restrictions as to the minimum or maximum size a project would have to be in order to certify under LEED-ND.

As for the more qualitative aspects of what makes a neighborhood, the LEED-ND Core Committee has refrained from defining the term precisely, but has been guided by the principles of smart growth and New Urbanism in writing credits that will recognize aspects of neighborhood that have proven most successful. The qualities of an ideal neighborhood include that it has a legible center and edge; is limited in size, typically five minutes average walk from center to edge; has a mix of land uses, to allow for some basic daily needs to be satisfied within the neighborhood; accommodates a diversity of household types; has an integrated network of walkable streets; and has special sites reserved for public spaces and civic buildings.

LEED-ND is principally aimed on improving land-use patterns, neighborhood design, and technology in the United States. Please refer to the “LEED Product Development and Maintenance Manual” for information on how LEED rating systems may be adapted and licensed for other countries.<sup>2</sup>

### Implementation Issues

Several implementation issues have been discussed but not finalized by the LEED-ND Core Committee. These issues include, importantly, the stage at which official certification will take place, since a majority of the land use and neighborhood design

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<sup>2</sup> The “LEED Product Development and Maintenance Manual” or “LEED Product Development Handbook” is one of three LEED Foundations documents. It is posted for download on the “LEED” page of the USGBC website ([www.usgbc.org](http://www.usgbc.org)). The direct link is <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>.

issues are settled at the planning stage, while full build-out of large-scale developments can take years. While the details have not been decided, it is the intent of the LEED-ND Core Committee to make available some form of LEED-ND formal approval at the planning stage, such that it could be earned by developers at the stage of land use entitlements. The LEED-ND Core Committee invites comment on issues of implementation as well as on the specifics of the rating system language.

About this Draft

**This draft of the LEED-ND Rating System is not final, and will likely be revised significantly before it is used for the pilot program.** Credits and prerequisites may be added or deleted, and specific language under the “Requirements” or “Submittals” section may change significantly. Any projects that are considering applying to participate in the pilot program or hoping to achieve LEED-ND certification under either the pilot or final rating system should NOT design or construct a project with the expectation that the requirements for certification as drafted here will remain the same for the pilot or final rating systems.

The LEED-ND Core Committee is currently organizing the LEED-ND Rating System into four categories: Location Efficiency; Environmental Preservation; Compact, Complete, & Connected Neighborhoods; and Resource Efficiency. These are different credit categories than have been used in other LEED rating systems, which are typically divided into the categories of Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality. The current credit categories of LEED-ND may remain the same or merge with the credit categories of other LEED products; credits and prerequisites have been intentionally left un-numbered so that they may be rearranged with less confusion. The LEED-ND Rating System will be reviewed by LEED Technical Advisory Groups and by appropriate experts from the urbanist and smart growth constituencies.

Credits or prerequisites that are based on credits and prerequisites in other LEED rating systems will be updated to reflect subsequent versions of those rating systems (e.g. LEED-NC version 2.2) unless the committee deems it inappropriate for the LEED-ND context.

The LEED-ND Core Committee has attempted to balance the need for a rating system that is manageable in size against the many complexities associated with neighborhood location and design that contribute to or detract from environmental and social benefits. As the work progresses, the committee may aim to make the draft more manageable in size. It may also consider reducing the total number of potential credit points awarded in LEED-ND from the current 114 to 100. The argument for making this reduction is twofold: to make the weightings clear and transparent, and to reduce the overall complexity of the system. The value of such a strategy will have to be weighed against the potential loss of measures and gradations that may be important to determining whether a proposed development will achieve the purposes of LEED-ND

### Format & Vocabulary of the Draft

The “Point Overview” at the beginning of this document shows the overall list of credits with the number of points attached to each credit in one place, along with the estimated levels of points needed to achieve the different levels (Certified, Silver, Gold, Platinum) of LEED-ND certification.

The rating system itself is divided into “Credits” and “Prerequisites.” LEED rating systems typically consist of a few prerequisites and many credits. In order to be certified, a project has to meet all of the prerequisites. Each credit is optional, but contributes to the project’s point total. A certain point total is required for certification, and higher point scores are required for silver, gold, or platinum LEED certification.

Each prerequisite and credit is organized in a standardized format for simplicity and quick reference. The first three sections summarize key points regarding the purpose and compliance requirements. Subsequent sections in other LEED reference guides (including the “Summary of Referenced Standards,” “Concerns,” “Design Approach,” “Synergies & Trade-Offs,” “Calculations,” “Resources,” and “Case Study” sections) provide supportive information to help with interpretation and implementation, but are largely undeveloped at this time for LEED-ND and are omitted.

- The “Intent” identifies the main goal(s) of the prerequisite or credit.
- “Requirements” specify the criteria to satisfy the prerequisite or credit.
- “Submittals” specify the documentation required for the LEED application.

Where appropriate, this draft also includes additional sections, which may be helpful at this stage of development.

- The “Rationale” section may include other reasons for the development of the prerequisite or credit.
- “Sources & Resources” may list some of the sources for development of the credit, although the sources used are not always listed, and were often drawn from the collective expertise of committee members. This section may also include sources for more information on the topic.
- The “Notes” section contains any other comments or explanatory information. In a few instances there will be text boxes in this section indicating that the LEED-ND Core Committee is explicitly requesting feedback on a particular issue, although comments on any issue are welcome.

The “Definitions” section at the end of document contains definitions of potentially unfamiliar terms or acronyms, as well as familiar terms that are defined more precisely for the purposes of the LEED-ND Rating System. Any term that is defined in this section is indicated as such in bold font for its first usage within a given credit or prerequisite.

Finally, “letter templates” are referenced in the submittals sections throughout the rating system. The LEED Letter Templates that are used for other LEED products streamline preparation of LEED certification applications by providing pre-formatted submittal sheets for each prerequisite and credit. They outline the specific project data needed to

demonstrate achievement of the LEED performance requirements and include calculation formulas where applicable. Letter Templates for existing LEED rating systems are currently available for download by those USGBC Web site users who have been given access to the online reference guide or the registered project welcome pages. A sample letter template is included as Appendix A.

### Questions for Comment

**All comments are welcome, and there are questions on the web-based comment form that provide opportunity for both general comments and credit-specific comments to be made.** As noted above, there are text boxes in the “Notes” sections of some credits or prerequisites indicating that the LEED-ND Core Committee is explicitly requesting feedback on a particular issue. In addition, the LEED-ND Core Committee is interested in comments regarding the following two issues that apply to credits and prerequisites throughout the rating system:

- For some credits, multiple points are rewarded for meeting an individual performance threshold a number of places in the current draft. The LEED-ND Core Committee welcomes comments on how to reward intermediate levels of performance short of the one stated threshold. The weighted point assignments in this draft are likely to change as LEED-ND is refined, and the committee will benefit from constructive suggestions in this area.
- For some credits, the LEED-ND Core Committee has struggled to draft appropriate “intent” language (see below for more on “intent”). Some committee members have favored narrowly drafted intents that correspond more concisely to the requirements, to provide the clearest guidance possible to project teams throughout the design and credit interpretation process. Others believe that some intents must be drafted and interpreted more broadly to reflect the multiple purposes and benefits of particular strategies. The current draft strives to achieve a balance between the two approaches, but the committee recognizes that the balance may not be perfectly struck in all cases. The core committee invites comments on intent language in general and suggestions as to how to improve individual intents.

### About the Comment Period

The comment period for this draft is not an official public comment period as required in the “LEED Foundations Policy Manual.”<sup>3</sup> The LEED-ND Core Committee has elected at this time to seek comment on its progress thus far via this comment period.

The comment period will be open for 45 days, beginning the day that notification of the availability of the draft is sent to the LEED-ND Corresponding Committee. The

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<sup>3</sup>The “LEED Foundations Policy Manual” is one of three LEED Foundations documents. It is posted for download on the “LEED” page of the USGBC website ([www.usgbc.org](http://www.usgbc.org)). The direct link is <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>.



comment solicitation is web-based, and while the comment period is open, it can be accessed at [www.usgbc.org/leed/nd](http://www.usgbc.org/leed/nd) .

About the LEED-ND Corresponding Committee

As previously mentioned, the LEED-ND Core Committee does the day-to-day work of developing the rating system; a second, larger corresponding committee is also established for every LEED product. In this way, a wider group of experts and interested parties can stay updated and provide feedback. The LEED-ND Corresponding Committee is invited to comment on draft versions of the LEED-ND rating system and has the first opportunity to respond to the call for pilot LEED-ND projects. In addition, LEED-ND Corresponding Committee members receive minutes from LEED-ND Core Committee meetings and notification of LEED-ND events.

**Readers of this document who are not already members of the LEED-ND Corresponding Committee are encouraged to join at this time.** The LEED-ND Corresponding Committee is open to USGBC members and non-members alike, but there are different ways to join:

- USGBC members should go to [www.usgbc.org](http://www.usgbc.org) and subscribe to the LEED-ND committee listserv through the individual site user account section of the website.
- If you are not a USGBC member, send an e-mail to [nd@committees.usgbc.org](mailto:nd@committees.usgbc.org) stating that you'd like to join the LEED-ND Corresponding Committee.

*USGBC, CNU, NRDC, and the LEED-ND Core Committee thank you for taking the time to review this draft. We sincerely appreciate your participation in developing LEED-ND.*

## POINT OVERVIEW

Title	Points	Percentage of total points
<b>Location Efficiency (2 Prerequisites / 7 Credits / 28 Points / 25% of total points)</b>		
Prerequisite: Transportation Efficiency	--	--
Prerequisite: Water and Stormwater Infrastructure Efficiency	--	--
Credit: Contaminated Brownfields Redevelopment	4	3.5%
Credit: High Cost Contaminated Brownfields Redevelopment	1	0.9%
Credit: Adjacent, Infill, or Redevelopment Site	3 to 10	8.8%
Credit: Reduced Automobile Dependence	2 to 6	5.3%
Credit: Contribution to Jobs-Housing Balance	4	3.5%
Credit: School Proximity	1	0.9%
Credit: Access to Public Space	2	1.8%
<b>Environmental Preservation (5 Prerequisites / 11 Credits / 13 Points / 11% of total points)</b>		
Prerequisite: Imperiled Species and Ecological Communities	--	--
Prerequisite: Parkland Preservation	--	--
Prerequisite: Wetland & Water Body Protection	--	--
Prerequisite: Farmland Preservation		
Prerequisite: Erosion & Sedimentation Control	--	--
Credit: Support Off-Site Land Conservation	2	1.8%
Credit: Site Design for Habitat or Wetlands Conservation	1	0.9%
Credit: Restoration of Habitat or Wetlands	1	0.9%
Credit: Conservation Management of Habitat or Wetlands	1	0.9%
Credit: Steep Slope Preservation	1	0.9%
Credit: Minimize Site Disturbance During Construction	1	0.9%
Credit: Minimize Site Disturbance Through Site Design	1	0.9%
Credit: Maintain Stormwater Runoff Rates	1	0.9%
Credit: Reduce Stormwater Runoff Rates	1	0.9%
Credit: Stormwater Treatment	2	1.8%
Credit: Outdoor Hazardous Waste Pollution Prevention	1	0.9%
<b>Compact, Complete, &amp; Connected Neighborhoods (3 Prereq / 22 Credits / 42 Points / 37% of total points)</b>		
Prerequisite: Open Community	--	--
Prerequisite: Compact Development	--	--
Prerequisite: Diversity of Uses	--	--
Credit: Compact Development	1 to 5	
Credit: Transit-Oriented Compactness	1	0.9%
Credit: Diversity of Uses	1 to 3	2.6%
Credit: Housing Diversity	4	3.5%
Credit: Affordable Rental Housing	1 to 2	1.8%
Credit: Affordable For-Sale Housing	1 to 2	1.8%
Credit: Reduced Parking Footprint	2	1.8%
Credit: Community Outreach and Involvement	1	0.9%
Credit: Block Perimeter	1 to 4	3.5%
Credit: Locating Buildings to Shape Walkable Streets	1	0.9%
Credit: Designing Building Access to Shape Walkable Streets	1	0.9%
Credit: Designing Buildings to Shape Walkable Streets	1	0.9%
Credit: Comprehensively Designed Walkable Streets	2	1.8%
Credit: Street Network	1	0.9%
Credit: Pedestrian Network	1	0.9%
Credit: Maximize Pedestrian Experience	1	0.9%
Credit: Superior Pedestrian Experience	1 to 2	1.8%
Credit: Applying Regional Precedents in Urbanism and Architecture	1	0.9%
Credit: Transit Subsidy	3	2.6%

Title	Points	Percentage of total points
Credit: Transit Amenities	1	0.9%
Credit: Access to Nearby Communities	1	0.9%
Credit: Adaptive Reuse of Historic Buildings	1 to 2	1.8%
<b>Resource Efficiency</b> (0 Prerequisites / 17 Credits / 25 Points / 22% of total points)		
Credit: Certified Green Building	1 to 5	4.4%
Credit: Energy Efficiency in Buildings	1 to 3	2.6%
Credit: Water Efficiency in Buildings	1 to 2	1.8%
Credit: Heat Island Reduction	1	0.9%
Credit: Infrastructure Energy Efficiency	1	0.9%
Credit: On-Site Power Generation	1	0.9%
Credit: On-Site Renewable Energy Sources	1	0.9%
Credit: Efficient Irrigation	1	0.9%
Credit: Greywater & Stormwater Reuse	2	1.8%
Credit: Wastewater Management	1	0.9%
Credit: Reuse of Materials	1	0.9%
Credit: Recycled Content	1	0.9%
Credit: Regionally Provided Materials	1	0.9%
Credit: Construction Waste Management	1	0.9%
Credit: Comprehensive Waste Management	1	0.9%
Credit: Light Pollution Reduction	1	0.9%
Credit: Contaminant Reduction in Brownfields Remediation	1	0.9%
<b>Other</b> (0 Prerequisites / 2 Credits / 6 Points / 5% of total points)		
Anticipated Accredited Professional Innovation Credit(s)	1 to 2	1.8%
Anticipated Innovation Credit(s)	1 to 4	3.5%
<b>TOTAL</b>	<b>114</b>	<b>100%</b>

#### Anticipated Certification Levels

(Percentages taken from the “LEED Product Development and Maintenance Manual”)

Certified: 46 – 56 points (40% of total points)  
 Silver: 57 – 67 points (50% of total points)  
 Gold: 68 – 90 points (60% of total points)  
 Platinum: 91 – 114 points (80% of total points)

## **LOCATION EFFICIENCY**

### **Prerequisite: Transportation Efficiency**

#### **Intent**

Reduce air pollution, energy consumption, and greenhouse gas emissions generated by transportation by encouraging new development in locations that reduce automobile dependence. Promote public health by encouraging new development in locations that provide increased opportunities for walking.

#### **Requirements**

- (1) Locate the **project** on either an **infill site** or on a **previously developed site**,  
OR
- (2) Locate the project near existing or planned **adequate transit service** so that a majority of dwelling units and business entrances within the project are within ¼ mile **walking distance** of publicly available bus transit service or within ½ mile walking distance of adequate rail, light rail, streetcar, or ferry transit service. In the case of planned service, show that the relevant transit agency has committed in a legally binding warrant that adequate transit service will be provided at or before the beginning of the transit agency's first service year after 50% of the units within the project are occupied and has identified all funding necessary to do so.  
OR
- (3) Locate the project near existing neighborhood amenities and services so that the project boundary is **adjacent** to existing development and located within ¼ mile walking distance of at least four or within ½ mile walking distance of at least six examples of the following uses, which must be existing and operational at the time of the project's first application: police/fire station; bank; post office; place of worship; park; library; school; convenience store; laundry/dry cleaner; other neighborhood-serving retail; medical/dental office; other office building or major employment center; stand-alone pharmacy; restaurant; supermarket; community or civic center. Uses may not be counted in two categories, e.g., an office building gets counted only once even if it is also a major employment center, and a store of any kind gets counted only once even if it has a diverse line of products and services. But a mixed use building housing several of the above services as distinct enterprises would count each as a separate use.  
OR
- (4) Locate the project in a zone where research demonstrates that rates of driving per resident are lower than the average rate for residents of the metropolitan region as a whole. One of two research methods may be used:

- a. Projections from a metropolitan planning organization (MPO), derived from a household transportation survey, showing that the transportation analysis zone(s) within which the project will be located generate(s) fewer vehicle miles traveled (VMT) per resident than the average for the metropolitan region as a whole.
- b. A site-specific study prepared by a registered engineer, indicating by best available technology and practice, consistent with the methodology below, that the project will generate an average VMT per resident that is lower than the average for the metropolitan area as a whole.

Methodology: If the project will be located within an area served by an MPO, the MPO boundary must be used to determine the scope of the region as a whole, and the study must use the MPO's determination of the average VMT per resident of the area as a whole. If the project will be outside an MPO region but within a Metropolitan or Micropolitan Statistical Area as defined by the US Census (see OMB Bulletin 05-02, February 22, 2005), the boundary of the region as a whole must be the same as that used by the Census to define the Statistical Area. If the project will be outside such an area, the scope of the region shall be the engineer's delineation of an equivalent "commuteshed," encompassing the average commuting distance reported by the US Census for the project's census tract. The study must take into account the latest data from all relevant government sources (including, for example, MPOs, the Census, and the Nationwide Personal Transportation Survey of the US Department of Transportation), and all assumptions and conclusions must be fully explained and justified.

## **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, a site map demonstrating that the project is located either on an infill site or a previously developed site;  
OR  
B) For compliance path 2, a site plan and vicinity map showing all existing and planned relevant transit routes, stops, and schedules or a brief narrative indicating frequency, type, and direction. Where planned transit is relevant, provide documents indicating the scheduled institution of service and the source of funding.  
OR  
C) For compliance path 3, a site plan and vicinity map indicating the project's boundary, sidewalks, and the locations of any of the relevant existing neighborhood amenities and services included in the neighborhood completeness list above.  
OR

D) For compliance path 4, copies of the projections or study specified in the “Methodology” section.

### ***Rationale***

Relevant to compliance paths 2 & 3, research shows that people are generally willing to walk farther to rail transit than to bus transit; most existing development rating systems use ¼ mile as the appropriate distance for access to bus transit and ½ mile as the appropriate distance for access to rail.

The required frequency for heavy rail and ferry service is more relaxed in order to encourage development near commuter rail stations and ferry terminals.

### ***Sources & Resources***

The measure for locating near existing neighborhood amenities and services is adapted from the “neighborhood completeness” indicator developed by Eliot Allen for INDEX. See, e.g., NRDC and Criterion Planners & Engineers, *Environmental Characteristics of Smart-Growth Neighborhoods*, Phase One (2000), <http://www.nrdc.org/cities/smartGrowth/char/charinx.asp>, Sacramento study Table 2 (comparing neighborhoods in Sacramento).

### ***Notes***

#### **Alternate language for Requirements paragraph (4)**

*While the core committee proposes the language set forth above, we also invite comment on two alternative approaches.*

**First alternative:** *This approach would retain a research-based path to satisfy the prerequisite, but require that the research be based on proximity to travel destinations rather than on VMT calculations. The language would read as follows:*

(4) Locate the project on a site whose proximity to jobs and dwellings within its region, measured by travel distance, is better than the average proximity of existing development to jobs and dwellings within the region. This must be demonstrated in a report prepared by a registered engineer indicating that the percentage of regional jobs and dwellings reachable from the project site within a travel distance of 10 miles is greater than the average percentage of regional jobs and dwellings reachable in 10 miles from all travel zones within the region.

Methodology: If the project will be located within an area served by a Metropolitan Planning Organization (MPO), the MPO boundary must be used to determine the scope of the region and the MPO’s transportation analysis zones

must be used as the travel zones in the study. If the project will be outside an MPO region but within a Metropolitan or Micropolitan Statistical Area as defined by the US Census (see OMB Bulletin 05-02, February 22, 2005), the boundary of the region must be the same as that used by the Census to define the Statistical Area. If the project will be outside such an area, the scope of the region must be the engineer's delineation of an equivalent "commuteshed," encompassing the average commuting distance reported by the US Census for the project's census tract. If the project will be outside an MPO region, the engineer must delineate travel zones generally equal to each other in population and comparable to those used by MPOs as transportation analysis zones.

*An advantage of this approach is that engineers may precisely and objectively measure travel distance, unlike projections of vehicle miles traveled. The approach is not dependent on research sources whose quality may vary from one location to another, or on new modeling under assumptions that could be biased. It also would allow a uniform methodology from one location to another, without regard to whether the location has pre-existing relevant data. Disadvantages, however, are that in every case it would require new calculations and would not allow applicants to take advantage of existing MPO data that in many cases will be straightforward, publicly available, and a reliable indicator of the differences between locations within a metropolitan region. Travel distance also correlates less directly to environmental impacts than vehicle miles traveled.*

**Second alternative:** *This approach would strike paragraph (4) altogether and require that applicants satisfy one of the first three paths to compliance. In other words, to qualify for a certification, sites would be required to be infill/redevelopment, transit-accessible or transit-planned, or proximate to existing neighborhood indicators. One suggestion is that the third path could be relaxed somewhat, to allow the development itself to supply some, but not all, of the required number of indicators.*

*An advantage of this approach is that the measure would avoid altogether reliance on new research and analysis that could be biased, or on previously existing databases whose quality could be uncertain. It also would be the easiest of the approaches to apply. A disadvantage is that it could exclude some sites that lack transit or neighborhood indicators but that are nonetheless suited for smart development because their location does not require much driving compared to their regions as a whole. In addition, if the third path is relaxed, the approach also could lead to the inclusion of sites that may have some minimal neighborhood indicators but that, compared with others in the region, are not ripe for smart development.*

## **LOCATION EFFICIENCY**

### **Prerequisite: Water and Stormwater Infrastructure Efficiency**

#### **Intent**

Conserve natural and financial resources required for construction and maintenance of infrastructure. Encourage new development within and near existing communities, in order to reduce multiple environmental impacts caused by haphazard sprawl.

#### **Requirements**

- (1) Locate the **project** on a site served by existing water and sewer infrastructure. Replacement or other on-location improvements to existing infrastructure are considered “existing” for the purpose of achieving this compliance path.

OR

- (2) Locate the project within a planned water and sewer service area  
AND  
provide the new water and sewer infrastructure.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, a site map showing that the project is served by existing water and sewer infrastructure;  
OR  
B) For compliance path 2,
  - i) a site map showing that the project is within a planned water and sewer service area and
  - ii) a brief narrative explaining the new infrastructure provided by developer and a letter from the relevant public authority stating that water and sewer infrastructure has been provided.



## **LOCATION EFFICIENCY**

### **Credit: Contaminated Brownfields Redevelopment** (4 Points)

#### **Intent**

Conserve land and reduce air, water, and land pollution from contaminated land.

#### **Requirements**

- (1) Locate **project** on a site, part or all of which is documented as contaminated,  
AND  
Remediate site contamination such that the controlling public authority approves the protective measures and/or clean-up as effective, safe, and appropriate for the future use of the site.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the civil engineer or responsible party, declaring the type of contamination that existed on the site and describing the remediation performed; and
- 2) Copies of the brownfields surveys/assessment/sampling results. Such documentation should include one or more ASTM E1527 “Phase I” reports, ASTM E1903-97 “Phase II” reports, State Response Program submittals/reports, reports adhering to EPA final standards and practices on all appropriate inquiries or others; and
- 3) A letter from the controlling public authority stating that the protective measures and/or clean-up constituted remediation that is effective, safe, and appropriate for the future use of the site.

#### **Notes**

The EPA definition of a brownfield site is “real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”

This credit was adapted from LEED-NC 2.1.

## **LOCATION EFFICIENCY**

### **Credit: High Cost Contaminated Brownfields Redevelopment** (1 Point)

#### **Intent**

Encourage the cleanup of more complicated or challenging contaminated brownfields sites.

#### **Requirements**

- (1) Earn the Contaminated Brownfields Redevelopment credit,  
AND
- Perform cleanup such that the costs of cleanup are in excess of \$1 million (USD).

#### **Submittals**

Provide the following:

- (1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met and
- (2) documentation demonstrating the cost of cleanup in excess of \$1 million (USD).

#### **Notes**

Not all of the \$1 million cleanup costs need be incurred directly by the developer; if a redevelopment authority or private-public partnership is bearing some of the financial burden, such a **project** would still be able to earn this credit, since the purpose is to give extra incentive to redevelop these sites.

## **LOCATION EFFICIENCY**

### **Credit: Adjacent, Infill or Previously Developed Site** (3 to 10 Points)

#### **Intent**

Encourage development within existing communities and already-developed places to reduce multiple environmental harms associated with haphazard sprawl. Reduce development pressure beyond the limits of existing development. Conserve natural and financial resources required for construction and maintenance of infrastructure.

#### **Requirements**

- (1) Locate **project** on an **adjacent site** (3 points)  
OR
- (2) Locate project on an **infill site** (7 points)  
OR
- (3) Locate project on a **previously developed site**. (10 points)

Each project can only earn points for one of the three options.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site map demonstrating that the project is located on either an adjacent site, an infill site, or a previously developed site.

## LOCATION EFFICIENCY

### **Credit: Reduced Automobile Dependence** (2 to 6 Points)

#### **Intent**

Encourage development in locations that exhibit superior performance in providing transportation choices or otherwise reducing motor vehicle use.

#### **Requirements**

- (1) Locate **project** on a site with outstanding transit service, defined as 60 or more easily accessible transit rides per day. The number of points available for increasing transit service is indicated in the table below. The total number of rides available is defined as the number of buses stopping within ¼ mile of a majority of the project's dwelling units and business entrances and the number of light rail trains, rail trains, and ferries stopping within ½ mile of the project's dwelling units and business entrances on weekdays. The number of rides available on light rail trains or rail trains shall be multiplied by the number of train cars on each train. The number of rides available on ferries shall be multiplied by three.

Total rides available per weekday	Points earned
60 – 124	2
125 – 249	3
250 – 499	4
500—999	5
1000 or more	6

OR

- (2) Locate project on a site with outstanding performance on travel behavior, meaning that the project is within the study area of a Metropolitan Planning Organization AND within a transportation analysis zone where **VMT** per capita or driving mode share has been demonstrated by MPO research derived from a household transportation survey to be no more than 80% of the average of the metropolitan region as a whole. Additional credit may be awarded for increasing levels of performance, as indicated:

Percent of average regional VMT	Points earned
71% to 80%	2
61% to 70%	3
51% to 60%	4
41% to 50%	5
40% or less	6

OR

- (3) Locate project on a site with a nearby vehicle-sharing program. Such programs include a carshare facility with on-site vehicles such as Zipcar or Flexcar or a free bicycle-sharing facility within the project, or a carshare facility located within ½ mile walking distance of a majority of dwelling units and business entrances in the project (1 point).

Points earned under (1) and (2) may not be combined. A point from (3) may be added to those earned under paragraphs (1) or (2), so long as the total earned does not exceed 6 points.

### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1,
  - i) a site plan and vicinity map showing all relevant transit routes and stops, and
  - ii) a calculation showing the total transit rides available;OR  
B) For compliance path 2, copies of the relevant MPO data;  
OR  
C) For compliance path 3, a site plan indicating the location of a carshare or bicycle-sharing facility.

### **Sources & Resources**

The measure in the first compliance path is partially derived from research conducted by the partners of the Institute for Location Efficiency

See <http://www.locationefficiency.com/> and John Holtzclaw, et al, "Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use: Studies in Chicago, Los Angeles, and San Francisco," *Transportation Planning and Technology*, Vol. 25, 2002.

## **LOCATION EFFICIENCY**

### **Credit: Contribution to Jobs-Housing Balance** (4 Points)

#### **Intent**

Encourage balanced communities with a diversity of uses and employment opportunities. Reduce energy consumption and pollution from motor vehicles by providing opportunities for shorter vehicle trips and/or use of alternative modes of transportation.

#### **Requirements**

- (1) For **projects** with residential components, locate the project within ½ mile of a number of pre-development jobs equal to or greater than 50% of the number of dwelling units in the project.

OR

- (2) For projects without residential components that are on an **infill site** or a **previously developed site**, locate the project within ½ mile of a number of existing dwelling units equal to or greater than 50% of the number of new jobs created by the project.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site map indicating
  - A) the number of residential dwelling units and/or jobs created by the project;
  - B) the jobs and/or residential dwelling units available within a ½ mile radius; and
  - C) where appropriate, the location of the project on an infill site or previously developed site.

## **LOCATION EFFICIENCY**

### **Credit: School Proximity** (1 Point)

#### **Intent**

Promote children's health through physical activity by facilitating walking to school.  
Promote a sense of community.

#### **Requirements**

- (1) Include a residential component in the **project**,  
AND  
Locate the project so that it borders a school that is open to the public or so that at least half the project's residences are within ½ mile walking distance of a school that is open to the public.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the number of residences in the project and the location of the nearest school.

## **LOCATION EFFICIENCY**

### **Credit: Access to Public Spaces** (2 Points)

#### **Intent**

Provide access to public gathering space in order to promote sense of community.

#### **Requirements**

(1) Locate and/or design **project** so that a public space, such as a park, plaza, town square, village green, etc., lies within ½ mile of all the entrances to the project's residential and commercial buildings.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location of building entrances and the location and type of any public spaces within ½ mile.



## **ENVIRONMENTAL PRESERVATION**

### **Prerequisite: Imperiled Species and Ecological Communities**

#### **Intent**

Protect imperiled species and ecological communities.

#### **Requirements**

- (1) Locate **project** on a **previously developed site**,  
OR
- (2) Work with the state's Natural Heritage Program to determine if species listed under the federal Endangered Species Act, the state's endangered species act, or species or ecological communities classified by NatureServe as G1 (critically imperiled) or G2 (imperiled), have been found on the site. If any such species have been found,
  - (a) Comply with an approved Habitat Conservation Plan (HCP) under the Endangered Species Act for each identified species or ecological community;  
OR
  - (b) If no approved HCP exists for an identified species or ecological community, then coordinate with the state's Natural Heritage Program to perform adequate surveys of imperiled species and ecological communities. If a survey finds that an imperiled species or ecological community is present, do not disturb land on portions of the site that are within 300 feet of the habitat for that species or ecological community. Protect such habitat from development in perpetuity. Analyze the threats that the project poses to identified species and ecological communities (e.g., introduction of exotic species, intrusion of residents into sensitive areas), and develop a management plan, which may include expanded buffers, that eliminates those threats.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met and stating that the site lies on previously developed land; and
- 2) (A) For compliance path 1, a site plan map showing pre-existing uses;  
OR

- (B) For compliance path 2,
- (i) a letter of compliance from the state Natural Heritage Program; and
  - (ii) appropriate documentation of methodology and result; and
  - (iii) (a) a statement that no imperiled species or ecological communities were found on the site;

OR

- (b) a map of the site which delineates imperiled species habitat in relation to the project; and
- (c) a brief narrative explaining how the site's imperiled species and ecological communities are to be conserved.

### ***Notes***

NatureServe ([www.natureserve.org](http://www.natureserve.org)) is a non-profit conservation organization that provides the scientific information and tools needed to help guide effective conservation action. It represents an international network of biological inventories—known as natural heritage programs or conservation data centers—operating in all 50 U.S. states, Canada, Latin America and the Caribbean. NatureServe and its network of natural heritage programs are the leading source for information about rare and endangered species and threatened ecosystems.

“G1” and “G2” are part of a classification system developed in the early 1970s by the Nature Conservancy's network of natural heritage programs in every state. NatureServe currently maintains the network of natural heritage program, the classification system, and the data on biodiversity. NatureServe uses a number of criteria in assessing the status of species, including the number of populations, the size of populations, the viability of the species occurrences, the trends in population numbers, and the threats to species.

G1 = critically imperiled. At very high risk of extinction globally due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = imperiled. At high risk of extinction globally due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

There are 1264 species listed as endangered and threatened in the U.S.

There are about 6800 G1 and G2 species in the U.S.

About 6000 of the G1 and G2 species are not listed, therefore not protected under the ESA.

## **ENVIRONMENTAL PRESERVATION**

### **Prerequisite: Parkland Preservation**

#### **Intent**

Protect natural habitat.

#### **Requirements**

- (1) Do not develop on publicly owned parks or refuges or on **in-holdings** in publicly held land. Exemptions will be considered for public park-related facilities.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that no part of the **project** site lies within a publicly owned park or refuge or on in-holdings in publicly held land.

## **ENVIRONMENTAL PRESERVATION**

### **Prerequisite: Wetland and Water Body Conservation**

#### **Intent**

Conserve water quality, natural hydrology and habitat through conservation of water bodies and wetlands.

#### **Requirements**

- (1) Locate the **project** on a site that includes no **wetlands**, riparian areas, water bodies, or land within 100 feet of these areas  
  
OR
- (2) Locate on a **previously developed site**. (No further action to achieve prerequisite is necessary, although local, state, or federal regulations may require further action or site design to accommodate, preserve, or restore natural hydrology.)  
  
OR
- (3) Locate on an **infill site** and do not build on or disturb 60% of any on-site wetlands, riparian areas, water bodies (as defined by the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual), and or buffer land that is within 100 feet of these areas. Mitigate the development of any wetlands, riparian areas, water bodies, or 100-foot buffer land on-site or within the project's sub-basin. (Mitigation is defined as the creation or restoration of wetlands.) Protect the remaining on-site wetlands, riparian areas, water bodies, and undisturbed 100-foot buffer land from development in perpetuity.  
  
OR
- (4) Do not build on or disturb 90% of any on-site wetlands, riparian areas, water bodies (as defined by the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual), and or buffer land that is within 100 feet of these areas. Mitigate the development of any wetlands, riparian areas, water bodies, or 100-foot buffer land on-site or within the project's sub-basin. (Mitigation defined as the creation or restoration of wetlands.) Protect the remaining on-site wetlands, riparian areas, water bodies, and undisturbed buffer land from development in perpetuity.

Exemptions from the above requirements:

- a) If a wetland assessment is performed using a method that is accepted by state or regional permitting agencies, wetlands that are assessed as performing poorly (i.e., with a "low" rating) in providing all measured wetland functions may be excluded from the calculations of percentages referenced in options 3 and 4 under

the requirements above, but the project must still include the full mitigation of any such areas and their functions that are destroyed, on-site or within the project's sub-basin.

- b) Minor development within the buffer may be undertaken in order to enhance appreciation for wetlands and water bodies. Such development may only include minor pathways, limited pruning and tree removal for safety, habitat management activities, educational structures not exceeding 200 square feet, and small clearings for picnic tables, benches, and non-motorized recreational water crafts.

### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, stating that the site has no wetlands, riparian areas, or water bodies and does not lie within 100 feet of these areas;  
  
OR  
  
B) For compliance path 2, stating that the project is located on a previously developed site;  
  
OR  
  
C) For compliance paths 3 and 4, stating whether or not the project is located on an infill site. Include
  - (ii) a site plan map that shows the boundaries of building and site disturbance associated with the project and all wetlands, riparian areas and water bodies, and a narrative describing any necessary mitigation activities; and
  - (iii) if a wetlands assessment method was used to exempt wetlands, provide a letter from a permitting agency stating that the method and results were accepted by that agency, and
  - (iv) provide a copy of the assessment report.

### ***Sources & Resources***

Recommended mitigation guidelines, as articulated by the National Academy of Sciences and adopted by the Army Corps of Engineers, are contained in the Army Corps of Engineers' memorandum,, "Operational Guidelines for Creating or Restoring Wetlands that are Ecologically Self-Sustaining.". See <http://www.mitigationactionplan.gov/nas404program.pdf>.

## **ENVIRONMENTAL PRESERVATION**

### **Prerequisite: Erosion & Sedimentation Control**

#### **Intent**

Reduce water pollution from erosion during construction.

#### **Requirements**

- (1) Design a sediment and erosion control plan, specific to the entire **project**, which conforms to U.S. EPA Document No. EPA 832/R-92-005 (September 1992), Storm Water Management for Construction Activities, Chapter 3, or to local erosion and sedimentation control standards and codes, whichever are more stringent. The plan shall meet the following objectives:
  - Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
  - Prevent sedimentation of storm sewer or receiving streams.
  - Prevent polluting the air with dust and particulate matter.

AND

- (2) Stipulate in **CC&Rs** or other binding documents providing that these erosion control requirements will be met for the project as a system, and for each individual building and development phase.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met and indicating whether the project follows local erosion and sedimentation control standards or the referenced EPA standard; and
- 2) a brief list of the measures implemented (if local standards and codes are followed, describe how they meet or exceed the referenced EPA standard); and
- 3) a copy of CC&Rs or other binding documents.

#### ***Sources & Resources***

This prerequisite was adapted from LEED-NC 2.1.

## **ENVIRONMENTAL PRESERVATION**

### **Prerequisite: Farmland Preservation**

#### **Intent**

Preserve irreplaceable agricultural resources by protecting prime and unique farmland from development.

#### **Requirements**

- (1) Locate on a site with no more than 25% **prime soils**, **unique soils**, or soils of state significance as identified in a state Natural Resources Conservation Service soil survey.

OR

- (2) Acquire fee title or conservation easements on off-site land equal to the area of the **project** or five acres, whichever is larger. 75% of the preserved parcel must be covered by prime soils, unique soils, or soils of state significance. Ensure protection of the land from development other than agricultural uses in perpetuity. The preserved land must be within 100 miles of the LEED-certified project.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) (A) a site map indicating that no more than 25% of the site is prime soils, unique soils, or farmland of state significance;

OR

- (B) (i) a copy of a contingent agreement with the off-site landowner that explains that the land or easements will be purchased, and how the land will be protected from development other than agricultural uses in perpetuity; and
- (ii) a letter from a government agency indicating what percentage of the protected land is prime soils, unique soils, or soils of state significance.

#### ***Rationale***

In general, prime soils produce more crops with less human intervention, including fertilizer and irrigation, making them the least expensive and most environmentally sound places to farm.

Crops that grow on unique soils are unlikely to grow at all in other places.

## Notes

### Alternate Approach to Farmland

*The Core Committee invites comment on an alternative approach, which would replace this prerequisite with a heavily weighted credit to encourage farmland preservation. The rationale for this approach is that there are some locations where much of the undeveloped land is considered prime. In particular, although prime farmland comprises only 14% of the nation's land base, and only 23.6% of all rural land, in some parts of the country the portion is much higher, in extreme cases as much as 97% of some counties. The prerequisite as written would force developers seeking LEED-ND certification either to avoid these locations or to undertake the additional expense of conserving prime farmland offsite.*

*Some committee members are concerned that this prerequisite would discourage projects from pursuing LEED-ND certification in these areas, in turn preventing development in these areas from being influenced by LEED-ND's other prerequisites and credits regarding efficient use of land. A credit might encourage prime farmland preservation without mandating it. The lack of a prerequisite, however, would mean that LEED-ND could honor development that is built on prime farmland even in the majority of locations where alternatives are abundant.*

*According to the American Farmland Trust, from 1992-1997 the United States converted to developed use more than 6 million acres of agricultural land—an area the size of Maryland. The rate of loss for 1992-1997, 1.2 million acres per year, was 51% higher than from 1982-1992. The rate of conversion of prime land was 30% faster, proportionally, than the rate for non-prime rural land from 1992-1997.*

*Some committee members are also considering development of an additional credit for on-site farm uses, and welcomes suggestions on that topic as well.*

The Natural Resources Conservation Agency is responsible for identifying prime and unique soils, and they make detailed soil surveys and maps available for every county in the United States. All of the NRCS data are available for download to GIS mapping programs.

According to sources at the American Farmland Trust: there are approximately 330 million acres of prime farmland in the U.S. The latest inventory data show 276,338,000 acres of prime farmland in agricultural use. An additional 50 million acres was in forest land. AFT is very focused on protecting prime farmland from conversion to developed uses because it is the soil that produces the highest yield of food and fiber with the least input of energy and with the least environmental effects. In other words prime farmland supports the most sustainable agricultural production. There are 1,393,739,400 acres of rural land in the US with 330,000,000 acres or 23.6% being prime farmland.



## **ENVIRONMENTAL PRESERVATION**

### **Credit: Support Off-Site Land Conservation** (2 Points)

#### **Intent**

Protect land that is important for natural or cultural resources from development.

#### **Requirements**

- (1) Acquire fee title or conservation easements on off-site land that is equal to or larger than 50% of the area of the **project** or five acres, whichever is larger;  
AND  
Ensure protection of the land from development in perpetuity

The land must be within 200 miles of the project, and must be identified by a local, state, or national government as important for conservation for natural or cultural purposes. Land for this credit may not be used as mitigation required by law or by prerequisites for LEED-ND.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a copy of a contingent agreement with the off-site landowner that explains that the land or easements will be purchased, and how the land will be ensured protection from development in perpetuity; and
- 3) a letter from a government agency that indicates that the land is designated as a priority site for conservation.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Site Design for Habitat or Wetland Conservation** (1 Point)

#### **Intent**

Conserve native wildlife habitat, **wetlands** and water bodies.

#### **Requirements**

- (1) Work with the state's Natural Heritage Program to determine if significant habitat occurs on the site. If significant habitat is found, do not disturb that significant habitat or portions of the site within 300 feet of it. Protect significant habitat and its 300-foot buffers from development in perpetuity. Significant habitat includes

- habitat for species that are listed or are candidates for listing under state or federal endangered species acts, or for those classified as G1, G2, G3 and/or S1 and S2 species by Natureserve (see note below about G and S classification);
- locally or regionally significant habitat, patches of natural vegetation at least 150 acres in size (irrespective of whether some of the 150 acres lies outside the **project** boundary),
- or habitat flagged for conservation under a regional or state conservation or green infrastructure plan.

OR

- (2) If the project is located on a **previously developed site**, use native species for all exterior vegetation. Any green roofs constructed do not have to use native species under this requirement.

OR

- (3) Design the project to fully conserve all water bodies, wetlands, and their functions on the site;

AND

Conduct an assessment, or compile existing assessments, showing the extent to which water bodies and/or wetlands on the site perform the following functions:

1) water quality maintenance, 2) wildlife habitat protection, and 3) hydrologic function maintenance, including flood protection.

AND

Based upon the functions provided, contiguous soils and slopes, and contiguous land uses, assign appropriate (not less than 100 feet) buffers from development throughout the site,

AND

protect wetlands, water bodies, and their buffers from development in perpetuity.

## **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) (A) For compliance path 1,
  - (i) provide a site map that delineates habitat conservation areas and their buffers in relation to proposed development, and any natural habitat on neighboring land; and
  - (ii) provide a letter from the state's Natural Heritage Program that the site was surveyed for significant native species and habitat;

OR

- (B) For compliance path 2, a site plan indicating previous use of site and a list of the native species used on the site;

OR

- (C) For compliance path 3, a site plan map that shows all wetlands and water bodies both on-site and on contiguous land and their buffers.

## **Notes**

G1 = Critically imperiled. At very high risk of extinction globally due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled. At high risk of extinction globally due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

S1 = Critically imperiled in the state because of extreme rarity (often 5 or fewer occurrences) or because of some factor such as very steep declines making it especially vulnerable to extirpation from the state

S2 = Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

See notes under "Prerequisite: Imperiled Species and Ecological Communities" for more information about NatureServe and the G1/G2/etc. classification.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Restoration of Habitat or Wetlands** (1 Point)

#### **Intent**

Conserve native wildlife habitat, **wetlands** and water bodies

#### **Requirements**

- (1) Restore native habitat, using only native species, to an area equal to at least 10% of the **development footprint** and protect such habitat from development in perpetuity.

OR

- (2) Document any impairment of wetlands, water bodies and their functions from pre-existing uses or off-site factors;

AND

Increase the total area of on-site wetlands and water bodies;

AND/OR

Improve the function of existing on-site wetlands or water bodies through restoration of hydrology, planting native species, removing exotic species, or other measures.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, provide a site map that delineates habitat restoration areas in relation to development footprint, and documentation that the land has been preserved in perpetuity;

OR

- B) For compliance path 2,
  - (i) provide a site plan map that shows all wetlands and water bodies both on-site and on contiguous land; and
  - (ii) a brief narrative identifying and describing the existing or created waters and wetlands and their functions.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Conservation Management of Habitat or Wetlands** (1 Point)

#### **Intent**

Conserve native wildlife habitat, **wetlands** and water bodies.

#### **Requirements**

- (1) Create a long-term (at least 10-year) management plan for on-site native habitats and their buffers and create a guaranteed funding source for management. Involve at least one person from a natural resources agency, a natural resources consulting firm, or an academic ecologist in writing the management plan and conducting or evaluating the ongoing management. The plan should include biological objectives consistent with habitat conservation, and it should identify a) procedures, including personnel to carry them out, for maintaining the conservation areas and b) threats that the **project** poses for habitat within conservation areas (e.g., introduction of exotic species, intrusion of residents in habitat areas) and measures to substantially reduce those threats.

OR

- (2) Create a long-term (at least 10-year) management plan for any on-site wetlands, water bodies and their buffers and a guaranteed funding source for management. Involve at least one person from a natural resources agency, a natural resources consulting firm, or an academic ecologist in writing the management plan and conducting or evaluating the ongoing management. The plan should include biological objectives consistent with wetland and water body conservation, and it should identify procedures, including personnel to carry them out, for maintaining the conservation areas.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, provide a copy of the management plan, along with implementation costs and identification of guaranteed funding source(s);

OR

- B) For compliance path 2, provide a copy of the management plan, along with implementation costs and identification of guaranteed funding source(s).

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Steep Slope Preservation** (1 Point)

#### **Intent**

Minimize erosion to protect habitat, and reduce stress on natural water systems, by preserving steep slopes in a natural, vegetated state.

#### **Requirements**

- (1) Build on sites that have no slopes greater than 15%.  
OR
- (2) On sites with slopes greater than 15% that are also **previously developed sites**,
  - treat any fractions of the site that have not been **previously developed** by complying with the requirements for sites that are not previously developed set forth below;  
OR
  - restore 100% of slopes over 40%, 45% of the area of slope between 25% to 40%, and 60% of the area of slope between 15% to 25% with native or adapted vegetation.

AND stipulate in **CC&Rs** or other binding development documents showing that the steep slope requirements will be met for the development as a system, and for each individual **project** and development phase.

OR

- (3) On sites with slopes greater than 15% that are not previously developed sites,
  - do not build on slopes greater than 40%  
AND
  - do not build or disturb site within 50 feet of the top of the slope, and 75 feet from the toe of the slope. The toe of a slope is defined as where there is a distinct break between a 40% slope and lesser slopes;  
AND
  - limit development to no more than 45% of the area of slope between 25% to 40%, and to no more than 60% of the area of slope between 15% to 25%.  
AND
  - stipulate in CC&Rs or other binding development documents showing that the steep slope requirements will be met for the development as a system, and for each individual project and development phase.

For all three compliance paths stated above, slopes up to 20 feet in elevation that are more than 30 feet from another slope greater than 15% are exempt from the requirements, although more restrictive local regulations may apply.

## **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) For compliance path 1, topographic site drawings indicating site slopes.
- 3) For compliance path 2 and 3,
  - (i) topographic site drawings indicating site slopes and highlighting landscape & habitat restoration; and
  - (ii) a copy of the CC&Rs, jurisdictional ordinance or code, or other binding development documents; and,
  - (iii) for previously undeveloped portions of the site, topographic site drawings indicating that no development lies within an area with over 40% steep slopes and the associated setbacks, and slopes between 15% to 40% comply with sited standards; and
  - (iv) specifications highlighting limits of construction disturbance.

## ***Rationale***

The goal of limiting disturbance to the stated parameters is to consolidate all areas of disturbance on the areas of least slope, and to minimize changes in grade, cleared area and volume of cut or fill on the site.

## ***Sources & Resources***

Potential strategies can include the following: aggregate the natural areas and link significant habitat with corridors of undisturbed land to promote ecological connectivity through an integrated network of natural systems; utilize open spaces, parks, trails, critical habitat, wetlands, water bodies, riparian corridors, buffers, and private outdoor areas to create a wildlife habitat network, to provide for wildlife movement and alleviate habitat fragmentation.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Minimize Site Disturbance During Construction** (1 Point)

#### **Intent**

Conserve existing natural areas and protect trees to provide habitat and promote biodiversity.

#### **Requirements**

- (1) Locate the **project** on a site that is 100% **previously developed** and for which the zone of construction impact is 100% previously developed.

OR

- (2) Identify limits of building area through the creation of building footprint zones  
AND  
limit site disturbance including earthwork and clearing of vegetation to 40 feet beyond the building footprint zone perimeter, 5 feet beyond primary roadway curbs, walkways and main utility trenches, and 25 feet beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the constructed area;  
AND  
identify all existing trees with a caliper larger than 12", and preserve a minimum of 50% of them;  
AND  
stipulate in CC&Rs or other binding documents that these requirements will be met for the project as a system, and for each individual building and development phase.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance path 1, a site plan indicating previously developed areas with respect to the zone of construction impact.  
OR  
B) For compliance path 2,
  - i) site drawings and specifications highlighting limits of construction disturbance, building footprint zones, and size of existing and retained trees; and
  - ii) a copy of the CC&Rs or other binding documents.



***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Minimize Site Disturbance Through Site Design** (1 Point)

#### **Intent**

Preserve existing tree canopy, native vegetation and pervious surfaces while encouraging high density, smart growth communities.

#### **Requirements**

- (1) Locate the **project** on a **previously developed site**.

OR

- (2) Depending on the overall density or intensity of the project, do not develop or disturb a proportion of the land that has not been **previously developed** on the site, exclusive of any land excluded from development by law or required to be preserved as a prerequisite of LEED-ND.

AND

Stipulate in **CC&Rs** or other binding development documents that the undisturbed area will be protected from development in perpetuity.

Densities, intensities, and minimum percentages are:

Residential Density per acre of <b>buildable land</b>	Commercial Intensity per acre of buildable land	Minimum percentage of previously undeveloped site area to leave undisturbed
< 15 units/acre	<b>FAR</b> < .50	20%
15-21 units/acre	FAR = .50 – 1.00	15%
> 21 units/acre	FAR > 1.0	10%

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) For compliance path 1, a site plan indicating the previously developed areas of the site,  
OR  
For compliance path 2, include
  - A) site drawings and specifications highlighting limits of construction disturbance and previous development; and
  - B) a copy of the CC&Rs, jurisdictional ordinance or code, or other binding development documents.

***Notes & Questions***

For mixed use buildings, density/intensity requirements will be prorated for residential and non-residential areas. Calculation methodology and guidance for this will be developed.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Maintain Stormwater Runoff Rates** (1 Point)

#### **Intent**

Reduce stormwater pollution, prevent flooding, and promote aquifer recharge.

#### **Requirements**

- (1) Maintain stormwater volume rates, such that the **post-project** development 2 year, 24 hour peak discharge volume does not exceed the **pre-project** development 2 year, 24 hour peak discharge volume.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a brief narrative explaining what the pre- and post-project 2 year, 24 hour peak discharge volume is, and the strategies employed to maintain it.

#### ***Rationale***

This credit is written to reward projects on undeveloped sites that take measures to maintain stormwater infiltration rates without penalizing projects that are on sites that have been **previously developed** and may have significant impervious surfaces already as a result.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Reduce Stormwater Runoff Rates** (2 Points)

#### **Intent**

Reduce stormwater pollution, prevent flooding, and promote aquifer recharge.

#### **Requirements**

- (1) Implement a stormwater management plan that results in a 25% decrease in the rate and quantity of **post-project** development stormwater runoff when compared with pre-project rates and quantities.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a brief narrative explaining what the pre- and post-project rates and quantities of stormwater runoff were, and any strategies employed to reduce them.

#### ***Rationale***

This credit is written to reward **projects** that take measures to improve stormwater infiltration rates on **previously developed** sites where significant impervious surfaces may already exist.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Stormwater Treatment** (2 Points)

#### **Intent**

Reduce surface water pollution from stormwater.

#### **Requirements**

- (1) Implement a stormwater management plan that captures and treats the stormwater runoff from 90% of the average annual rainfall (see note, below) using acceptable best management practices (BMPs) that are capable of removing 80% of the average annual post-development total suspended solids (TSS) load based on existing monitoring reports. BMPs are considered to meet these criteria if
  - a) they are designed in accordance with standards and specifications from a state or local program that has adopted these performance standards, or
  - b) there exists in-field performance monitoring data demonstrating compliance with the criteria. Data must conform to accepted protocol for BMP monitoring, for example, (e.g., Technology Acceptance and Reciprocity Partnership (TARP) Washington State Department of Ecology) for BMP monitoring.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a copy of the stormwater management plan for treatment.

#### ***Rationale***

Urban runoff contains a broad range of pollutants. If carried directly from impervious surfaces into waterways or pipes this runoff is a major cause of water pollution and degradation of rivers, lakes, beaches, and bays. By treating runoff on-site through infiltration, the amount of total runoff and the amount of pollutants carried in the runoff are reduced.

#### ***Sources & Resources***

Center for Watershed Protection (<http://www.cwp.org/>), The California Stormwater Quality Association ([www.casqa.org](http://www.casqa.org)), Water Environment Federation ([www.wef.org](http://www.wef.org)), Oregon Department of Environmental Quality, Nonpoint Source Pollution Program (<http://www.deq.state.or.us/wq/nonpoint/nonpoint.htm>)

This credit was adapted from the second public comment version of LEED-NC 2.2.

***Notes***

In the United States, there are three distinct climates that influence the nature and amount of rainfall occurring on an annual basis. Humid watersheds are defined as those that receive at least 35 inches of rainfall each year, Semi-arid watersheds receive between 15 and 35 inches of rainfall per year, and Arid watersheds receive less than 15 inches of rainfall per year. For this credit, 90% of the average annual rainfall is equivalent to treating the runoff from:

- (a) Humid Watersheds – 1 inch of rainfall;
- (b) Semi-arid Watersheds – 0.75 inches of rainfall; and
- (c) Arid Watersheds – 0.5 inches of rainfall.

## **ENVIRONMENTAL PRESERVATION**

### **Credit: Outdoor Hazardous Waste Pollution Prevention** (1 Point)

#### **Intent**

Reduce stormwater pollution from the use of pesticides and fertilizers

#### **Requirements**

- (1) Provide CC&Rs or other binding documents that stipulate that
  - only the safest and least polluting fertilizers and pesticides may be used to maintain landscapes within the **project** boundaries

OR

- that no fertilizers and pesticides may be used to maintain landscapes within the project boundaries.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) copies of the CC&Rs or other binding documents.

#### **Notes**

*The Core Committee invites comment on how best to differentiate safe and less polluting fertilizers and pesticides for the purposes of this credit.*



## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Prerequisite: Open Community**

#### **Intent**

Promote developments that are good neighbors to their surrounding communities. Foster a sense of community and connectedness beyond the development.

#### **Requirements**

- (1) Ensure that all streets, sidewalks, and public spaces that are built as part of the **project** or serving the project directly are available for general public use, and are not enclosed within a gated enclave.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the publicly available streets and sidewalks.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Prerequisite: Compact Development**

#### **Intent**

Conserve land. Promote livability, transportation efficiency, and walkability.

#### **Requirements**

- (1) Build residential components of **project** at an average density of seven or more dwelling units per acre of **buildable land** available for residential use  
AND  
Build commercial components of project at an average intensity of a floor area ratio of 0.50 or greater.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating densities and/or intensities.

#### ***Sources & Resources***

Research shows that regular, half-hour bus transit service begins to be viable at around seven dwelling units per acre and that, other factors being equal, each doubling of residential density is associated with a 20-30% reduction in vehicle miles traveled per household and per capita. See, e.g., Pushkarev and Zupan, *Public Transportation and Land Use Policy*, Indiana University Press, 1977; John Holtzclaw, et al, "Location Efficiency: Neighborhood and Socio-Economic Characteristics Determine Auto Ownership and Use: Studies in Chicago, Los Angeles, and San Francisco," *Transportation Planning and Technology*, Vol. 25, 2002.

Because the standard is average density or intensity, a developer may exercise considerable flexibility, so long as the average is achieved. The use of "buildable land" for calculating density was chosen after discussion with Eliot Allen of Criterion Planners and Engineers on how to avoid difficulties presented by the use of gross density, which can be unfair to developers because it does not exclude land that must be set aside, or traditional net residential density, which looks only at residential parcels, excludes too much land, and does nothing to prevent the spread of development across a region. (For an example of the application of buildable land, see Snohomish County Tomorrow, *2002 Growth Monitoring/Buildable Lands Report* (2003), <http://www.co.snohomish.wa.us/pds/1000-SCT/Report/Jan03OneRpt/rpttext.pdf>.)

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Prerequisite: Diversity of Uses**

#### **Intent**

Promote community livability, transportation efficiency, and walkability.

#### **Requirements**

- (1) Build on a site smaller than 7 acres.  
OR
- (2) Include a residential component in the **project**  
AND  
ensure that no more than 90% of total interior square footage comprises any single **use type**.  
  
OR
- (3) Locate the project such that its boundary is located within ¼ mile **walking distance** of at least four OR within ½ mile walking distance of at least six examples of the following uses: police/fire station; post office; place of worship; park; library; school; convenience store; laundry/dry cleaner; supermarket; other neighborhood-serving retail; medical/dental office; other office building; pharmacy; restaurant; other major employment center; community or civic center. Uses may not be counted in two categories, e.g., an office building gets counted only once even if it is also a major employment center, and a store of any kind gets counted only once even if it has a diverse product line. But a mixed use building with several of the above services included as distinct enterprises would count each as a separate use.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) (A) For compliance path 1, a site plan indicating the size of the project,  
OR  
(B) For compliance path 2, a site plan indicating the size and a calculation showing the percentage of square footage of each use type within the project,  
OR

- (C) For compliance path 3, a site plan indicating the size and location of all use types included in the project, and a vicinity map indicating neighboring development and the use types falling within the specified walking distance.

### ***Sources & Resources***

Second compliance path regarding neighborhood completeness is adapted from the “neighborhood completeness” indicator developed by Eliot Allen for INDEX. See, e.g., NRDC and Criterion Planners & Engineers, *Environmental Characteristics of Smart-Growth Neighborhoods*, Phase One (2000), <http://www.nrdc.org/cities/smartGrowth/char/charinx.asp>, Sacramento study Table 2 (comparing neighborhoods in Sacramento).

### ***Notes***

For the purposes of this prerequisite, “residential component” would be defined so that any type of live-work facility would be included.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Compact Development** (1 to 5 Points)

#### **Intent**

Conserve land. Promote community livability, transportation efficiency, and walkability.

#### **Requirements**

- (1) Design and build **project** to achieve the the average densities or intensities shown in the table below. To earn specified points, the residential portion of the project must be built to the residential densities in the table below AND all non-residential components of the project must be built to the non-residential intensities below.

Residential Density Measured as dwelling units per acre of <b>buildable land</b>	Non-residential Intensity Measured as Floor to Area Ratio ( <b>FAR</b> ).	Points Available
15 to 21	0.75 to < 1.0	1
22 to 27	1.0 to < 1.5	2
28 to 34	1.5 to < 2.0	3
35 to 39	2.0 to < 2.5	4
> 39	≥ 2.5 and higher	5

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating densities and/or intensities.

#### **Notes**

For mixed use buildings, density/intensity requirements will be prorated for residential and non-residential areas. Calculation methodology and guidance for this will be developed.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Transit-Oriented Compactness** (1 Point)

#### **Intent**

Maximize walking trips to and from transit stops in the area immediately surrounding the transit stop.

#### **Requirements**

- (1) Design and build the **project** such that the average residential density and non-residential intensity of all project development within 800 feet of a transit stop has a minimum of twice the average density or intensity, as appropriate, of the full project or of the area within ¼ mile of the transit stop, whichever area is larger.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating densities/intensities within 800 feet of a transit stop and densities/intensities of the entire project, or within a ¼ mile of the transit stop.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Diversity of Uses** (1 to 3 points)

#### **Intent**

Promote community livability, transportation efficiency, and walkability.

#### **Requirements**

- 1) Include a residential component in the **project**  
AND  
design or locate project such that the majority of the dwelling units are within ½ mile of uses in at least two (1 point), four (2 points) or seven (3 points) of the following non-residential use categories:
  - everyday retail (convenience, general, grocery, drug, hardware, gas, laundry),
  - discretionary retail (restaurants, bookstores, departments stores, specialty shops),
  - entertainment (movies, theaters, concert halls, music and performance venues),
  - educational facilities (daycare, schools, college, university),
  - public/private clubs (not open to public) and associated recreational facilities,
  - religious (including cemeteries),
  - government services (city hall, court, jail, police station, fires station, post office, motor vehicle admin),
  - other civic buildings (library, museum, community center, transportation depots/stations/terminal),
  - offices (not counting home-based, small, personal offices),
  - lodging,
  - medical (hospital, clinic, private offices),
  - public recreational facilities: playing courts, sports fields, extensive trail networks,
  - light industrial (including auto repair) warehouses,
  - nurseries, market gardens, public community gardens.

A pedestrian must be able to reach the uses via pedestrian routes that do not necessitate crossing any streets that a) have speed limits of greater than 50 miles per hour, or b) have no pedestrian crossings where vehicle traffic stops.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan showing the location of all residential units and the relevant uses within ½ mile **walking distance**.

***Sources & Resources***

Adapted from TND Design Rating Standards Version 2.1, Laurence Aurbach, June 2005.

***Notes***

**Alternative Lists of Uses**

*The list of uses in this credit differs from the list referenced in the Prerequisite regarding Diversity of Uses and the Prerequisite regarding Transportation Efficiency. The two lists are derived from the work of two expert sources consulted. The LEED-ND Core Committee invites comment on the strengths and weaknesses of either list.*



## COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS

### **Credit: Housing Diversity** (4 Points)

#### **Intent**

To enable citizens from a wide range of economic levels and age groups to live within a community.

#### **Requirements**

- (1) Include a sufficient variety of housing sizes and types in the **project** such that the total variety of housing within the project or within ¼ mile of the project achieve at least 0.5 on the Simpson Diversity Index using the housing categories below.

The Simpson Diversity Index score is calculated with the following equation:

$$\text{Score} = 1 - \sum (n/N)^2,$$

where  $n$  = the total number of dwellings in a single category, and  
 $N$  = the total number of dwellings in all categories.

#### Housing Categories:

- Detached residential large - (greater than 1200 sf)
- Detached residential small - (less than 1200 sf)
- Duplex or townhouse - large (greater than 1200 sf)
- Duplex or townhouse - small (less than 1200 sf)
- Multifamily dwelling in building with no elevator - large (greater than 1200 sf)
- Multifamily dwelling in building with no elevator - small (less than 1200 sf)
- Multifamily dwelling in building with elevator - large (greater than 1200 sf)
- Multifamily dwelling in building with elevator - small (less than 1200 sf)
- Live/work large (greater than 1200 sf)
- Live/work small (less than 1200 sf)
- Accessory Unit – large (greater than 1200 sf)
- Accessory Unit – small (less than 1200 sf)

Score on the Simpson Diversity Index	Points Earned
$\geq 0.5$ and $< 0.6$	1
$\geq 0.6$ and $< 0.7$	2
$\geq 0.7$ and $< 0.8$	3
$\geq 0.8$	4

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met, and
- 2) a calculation of the Simpson Diversity Index and a list of the types and sizes of units in each housing category included in the project or in the project and within  $\frac{1}{4}$  mile of the project; and
- 3) a site plan or vicinity map indicating the location of the units included in the calculation.

### ***Rationale***

A diverse range of housing can allow members of an extended family to live in the same neighborhood; it can provide housing for those who work nearby, such as young professionals new to the workforce, teachers, emergency responders and service workers. When neighborhoods serve a variety of ages and incomes, they are more resistant to cycles of abandonment and decline, and to unhealthy concentrations of poverty, than are non-diverse neighborhoods. The Simpson Diversity Index calculates the probability that any two randomly chosen dwellings will be in different categories. (TND Design Rating Standards Version 2.1, Laurence Aurbach, June 2005)

### ***Sources & Resources***

Ahawahnee Principles, Community Principles #4.

[www.lgc.org/ahwahnee/principles.html](http://www.lgc.org/ahwahnee/principles.html)

**TND** Design Rating Standards Version 2.1, Laurence Aurbach, June 2005

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Affordable Rental Housing** (1 to 2 Points)

#### **Intent**

To enable citizens from a wide range of economic levels and age groups to live within a community.

#### **Requirements**

- (1) Include a proportion of rental units priced for households earning below **area median income** such that
  - At least 20% of total rental units are priced for households up to 50% of area median income (1 point)
  - OR
  - At least 40% of total rental units are priced for households up to 80% of area median income (2 points).

AND

- (2) Maintain these units at affordable levels for a minimum of 15 years.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met;
- 2) a pricing schedule for each unit in the **project**, current HUD data regarding the median income for the jurisdiction in which the project is located and a calculation which demonstrates that the required percentages of affordable housing have been achieved; and
- 3) A copy of the regulatory and operating agreement, deed restrictions, or other recorded document evidencing that the units will be maintained at affordable levels for a minimum of 15 years.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Affordable For-Sale Housing** (1 to 2 Points)

#### **Intent**

To enable citizens from a wide range of economic levels and age groups to live within a community.

#### **Requirements**

- (1) Include a proportion of for-sale housing affordable to households at or slightly above the area median income:
  - At least 10% of for-sale housing is priced for households up to 100% of the area median income (1 point).
  - OR
  - At least 20% of for-sale housing is priced for households up to 120% of the area median income. (2 points)

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met and
- 2) a pricing schedule for each unit in the **project**, current HUD data regarding the median income for the jurisdiction in which the project is located and a calculation which demonstrates that the required percentages of affordable housing have been achieved.

#### ***Rationale***

In setting the draft standards for affordable for-sale housing, the LEED-ND Core Committee is aware that houses that sell for 100% and 120% of average median income are still unaffordable for many American families. This level was set mindful of the fact that new housing is routinely added to the housing inventory only at higher cost levels. The committee believes that projects that offer new for-sale housing at moderate price levels would represent a major market transformation and should be rewarded under LEED-ND.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Reduced Parking Footprint** (2 Points)

#### **Intent**

Reduce stormwater runoff per capita. Encourage neighborhood walkability and promote public health through physical activity.

#### **Requirements**

- (1) Use no more than one row of parallel, angled, or perpendicular parking spaces to separate the front of buildings from the street. (1 point)  
AND/OR
- (2) Use no more than 20% of the **project** land devoted to residential and/or commercial uses for surface parking facilities. Underground or multi-story parking can provide additional capacity if necessary. On-street parallel parking spaces are exempt from this calculation. (1 point)

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location and size of all parking facilities supplied as part of the project.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Community Outreach and Involvement (1 Point)**

#### **Intent**

To encourage community participation in the **project** design and planning and involve the people who live in a community in deciding how it should be improved or how it should change over time.

#### **Requirements**

- (1) Meet with immediate neighbors and local public officials to solicit input on the proposed project during the pre-conceptual design phase,  
AND
- (2) Host an open community meeting during conceptual design phase to solicit input on the proposed project,  
AND
- (3) Modify the project design as a direct result of community input, OR, if modifications are not made, explain why community input did not generate design improvements,  
AND
- (4) Work directly with community associations and/or other social networks of the community to advertise public meetings and generate comments on project design,  
AND
- (5) Establish ongoing means for communication between the developer and the community throughout the design and construction.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) Documentation that public meeting(s) was held such as fliers, agenda, minutes, invitation letters, photographs of the meeting; and
- 3) Copies of meeting sign-in sheet(s) and minutes to demonstrate community participation and input; and
- 4) A brief narrative and/or illustration demonstrating how community input influenced changes to the design or why changes were not generated; and
- 5) Letters of support from community associations and/or social networks stating that the project team worked directly to engage with the association or network to advertise and generate comments; and
- 6) A brief narrative describing the ongoing means of communication between developers and community during design and construction.

***Sources & Resources***

- Local Government Commission [www.lgc.org](http://www.lgc.org) public participation and Ahwahnee Principles pages.
- Laura Bruce and Kaid Benfield, NRDC, Existing Endorsement and Rating Systems for “Smart Development,” analysis for the LEED-ND Core Committee, Spring 2004.
- National Charrette Institute, [www.charretteinstitute.org](http://www.charretteinstitute.org)

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Block Perimeter** (1 to 4 Points)

#### **Intent**

To promote connectivity.

#### **Requirements**

(1) Limit average block perimeter within the **project**, as follows:

<b>Average block perimeter</b>	<b>Points available</b>
Between 1551 and 1800 feet	1
Between 1300 and 1550 feet	2
Between 1050 and 1299 feet	3
Between 800 and 1049 feet	4

The perimeter of each block includes the properties bounded by the sidewalk or the equivalent provision for walking, and does not include the sidewalks themselves.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the length of block perimeters, and
- 3) a calculation of the average block perimeters within the project.

#### **Notes**

Examples of average block perimeter patterns:

between 1550 and 1800 feet = historic Miami size  
between 1050 and 1299 feet = most **TNDs**  
between 800 and 1049 feet = historic Portland size  
between 1120 and 1640 feet = historic Savannah



## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Locating Buildings to Shape Walkable Streets** (1 Point)

#### **Intent**

Encourage pedestrian-oriented streets.

#### **Requirements**

- (1) Design and build **project** such that each building has a front façade that faces a public space such as a street, square, or plaza;  
AND  
the front façades of at least 80% of all buildings are no more than 25' from front property line;  
AND  
the front facades of at least 50% of buildings are no more than 18' from the front property line;  
AND  
the majority of mixed-use and commercial buildings are contiguous to the sidewalk.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating setbacks for all buildings in the project.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Designing Building Access to Shape Walkable Streets** (1 Point)

#### **Intent**

Encourage pedestrian-oriented streets

#### **Requirements**

- (1) Design and build **project** so that a principal functional entry of every building faces a public space such as a street, square, or plaza;  
AND  
there are functional building entries located every 75 feet, on average, or more frequently, along commercial streets  
AND  
there is at least one entry per building facing a public space such as a street, square, or plaza in residential areas.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location of entryways to all buildings.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Designing Buildings to Shape Walkable Streets** (1 Point)

#### **Intent**

Encourage pedestrian-oriented streets.

#### **Requirements**

- (1) Design and build **project** so that each building has a front façade that faces a public space such as a street, square, or plaza;  
AND  
all ground-level non-residential interior spaces that face a public space have transparent glass on at least 33% of the ground-level façade;  
AND  
no blank (without doors or windows) walls longer than 50 feet are constructed along sidewalks. Public art installations such as murals may be exempted;  
AND  
Stipulate in **CC&Rs** or other binding documents that owner(s) will keep ground-level non-residential spaces unshuttered at night.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating which buildings have front facades, transparent glass, and blank walls; and
- 3) a copy of CC&Rs or other binding documents.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Comprehensively Designed Walkable Streets** (2 Points)

#### **Intent**

Encourage pedestrian-oriented streets.

#### **Requirements**

- (1) Earn all three of the following credits:
- Locating Buildings to Shape Walkable Streets
  - Accessing Buildings to Shape Walkable Streets
  - Designing Buildings to Shape Walkable Streets

#### **Submittals**

Submittals from the three credits referenced will be used to confirm achievement.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Street Network** (1 Point)

#### **Intent**

Provide direct and safe connections, for pedestrians and bicyclists as well as drivers, to local destinations and neighborhood centers. Promote public health through increased physical activity.

#### **Requirements**

- (1) Provide at least 300 intersections per square mile of newly developed land,  
AND  
Include a pedestrian or bicycle through-connection in a majority of any new cul-de-sacs unless topographical conditions prohibit them.

The number of intersections required to earn this credit will be prorated for parcels smaller than a square mile.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the number of intersections within the **project**, the total area of the project, and any pedestrian or bicycle connections made at cul-de-sacs.

#### ***Sources & Resources***

Examples of some intersection densities:

- Kentlands in Gaithersburg, Maryland is 340 intersections/square mile after deducting cul de sacs.
- Chicago is 256 intersection/square mile with no cul de sacs.
- Downtown Portland is somewhere between 250 and 400 per square mile.

See also Allan Jacobs' counts from "Great Streets":

[http://safety.fhwa.dot.gov/ped\\_bike/univcourse/swless01.htm](http://safety.fhwa.dot.gov/ped_bike/univcourse/swless01.htm)

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Pedestrian Network** (1 Point)

#### **Intent**

Provide direct and safe connections, for pedestrians to local destinations and neighborhood centers. Promote public health through increased physical activity.

#### **Requirements**

- 1) Provide continuous sidewalks or equivalent provisions for walking along all streets within the **project**. New sidewalks must be at least four feet wide.

Equivalent provisions for walking include *woonerfs* and footpaths.

Sidewalks are not required on both sides of the street where the street is designed for a speed of 10 miles per hour or lower.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location and width of all new sidewalks or equivalent provisions for walking.

#### **Notes**

*The LEED-ND Core Committee would like to ensure that this credit is flexible and available to projects in different contexts, but is concerned about whether or not unpaved footpaths would be unusable for those with certain disabilities. The committee is seeking comment on the issue.*

*Woonerf* is a Dutch word that means "street for living". In practice, it is common space shared by pedestrians, bicyclists, and low-speed motor vehicles. They are usually streets raised to the same grade as curbs and sidewalks. Vehicles are slowed by placing trees, planters, parking areas, and other obstacles in the street, so that motorists travel at walking speed.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Maximize Pedestrian Safety and Comfort** (1 Point)

#### **Intent**

Provide direct, safe, and comfortable connections, for pedestrians and bicyclists, to local destinations and neighborhood centers. Promote public health through increased physical activity.

#### **Requirements**

- (1) Provide on-street parking on 80% of all new streets,  
AND  
Design and construct all streets within the project, whether new or existing, for a maximum speed of 20 mph for primarily residential streets or 25 mph for primarily commercial streets,  
AND  
Plant street trees between the vehicle travel way and sidewalk at intervals of no less than 40 feet;  
AND  
Ensure that a majority of ground-floor dwelling units have an elevated finished floor no less than 24" above the sidewalk grade.

The percentage of on-street parking shall be measured by comparing the length of street designated for parking to the total length of the curb around the perimeter of each block, including curb cuts, driveways, and intersection radii.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating
  - (A) the location of on-street parking;
  - (B) the speeds for which streets are designed and the legal speed limits posted;
  - (C) the location of street trees; and
  - (D) the location of dwelling units which have an elevated finished floor.

#### ***Rationale***

Street tree intervals are meant to be adequate when mature to provide buffer/driver alertness.

#### ***Sources & Resources***

For more on tree planting see Trees in Urban Design, 2<sup>nd</sup> edition, by Henry F. Arnold ISBN: 0442203365(pp. 53-54, 64)

According to traffic engineer Walter Kulash,

- In urban areas, statistical analysis says that street trees planted in close proximity to the edge of the street improve safety. (Lee and Mannering, 1995, for the Washington State DOT)
- The shade from street trees is a highly significant factor in retarding the oxidation of the binder, and hence in prolonging pavement life on local streets. When we consider that local streets comprise about 90% of all street mileage, the impact of street trees on resurfacing costs becomes apparent.

### **Notes**

*Elevated floors provide a sense of privacy for occupants of dense housing and facilitate the opening curtains and other interior window treatments, allowing for more “eyes on the street” to promote community safety. They also provide pedestrians with a comfortable sense that they are not intruding upon privacy of residents. But they raise the need to provide special adaptations to provide accessibility for persons of all physical abilities. The LEED-ND Core Committee is working to find a solution that serves all parties, and is considering developing a credit to encourage and recognize achievement in creating superb visitability and accessibility. The committee invites comment on the topic.*



## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Superior Pedestrian Experience** (1 to 2 Points)

#### **Intent**

Provide appealing and comfortable pedestrian street environments in order to promote pedestrian activity.

#### **Requirements**

- (1) In commercial or mixed use **projects**, design and build 50% or more of the total number of office buildings to include ground floor retail;  
AND  
Ensure that all businesses and/or other community services on the ground floor are accessible directly from sidewalks along a public space such as a street, square, or plaza; (1 point)  
  
AND/OR
- (2) Place trees or other structures to provide shade when mature over at least half the length of sidewalks included within or contiguous to the project. The estimated crown diameter (the width of the shade if the sun is directly above the tree) is used to calculate the shaded area. (1 point)

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location of any office buildings, any ground floor retail, any sidewalk entrances to businesses or community services, any vistas, and any shade trees or other structures.

#### ***Sources & Resources***

For more on tree planting see Trees in Urban Design, 2<sup>nd</sup> edition, by Henry F. Arnold  
ISBN: 0442203365  
(pp. 53-54, 64)

Davis, California's parking lot 50% shading ordinance:  
[www.city.davis.ca.us/pb/pdfs/planning/forms/Parking\\_Lot\\_Shading\\_Guidelines.pdf](http://www.city.davis.ca.us/pb/pdfs/planning/forms/Parking_Lot_Shading_Guidelines.pdf)  
<http://www.city.davis.ca.us/pcs/trees/master.cfm>

See also “Maximize Pedestrian Safety” for information on how shade prolongs durability of sidewalks in many warm climates.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Applying Regional Precedents in Urbanism and Architecture**

(1 Point)

#### **Intent**

Promote energy savings, respond to regional climate, increase the life of buildings and materials, provide cultural continuity, and reinforce local distinctiveness.

#### **Requirements**

- (1) Obtain certification from municipal planning authority, local design review board, chapter of the American Institute of Architects, chapter of ASLA, or local historic preservation organization that the following have been accomplished by the **project** team:
  - Early in the design process, local and regional historical patterns of neighborhood development and building design were analyzed.  
AND
  - To-scale comparisons were made between those patterns and the proposed plan in terms of: block size; orientation to the sun and prevailing breezes; relationships of buildings to streets; materials; treatments of wall openings; roof types; encroaching elements such as porches, arcades, or overhangs; and/or landscape patterns.  
AND
  - Patterns that have proven successful and have stood the test of time were replicated.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A letter or equivalent certification, signed by the relevant party from a municipal planning authority, local design review board, chapter of the American Institute of Architects, chapter of ASLA, or local historic preservation organization; and
- 3) diagrams documenting the analysis and ways in which precedent patterns have been incorporated in the new design.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Transit Subsidy (3 Points)**

#### **Intent**

Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

#### **Requirements**

- (1) Provide transit passes, subsidized to be half of regular price or cheaper, for at least one year, for residents and employees located within the **project**. Publicize the fact that subsidized transit passes are available to the eligible residents and employees. (3 points)

OR

- (2) Provide transit service (with vans, shuttles, buses) to rail, ferry, or other major transit facilities and/or another major destination such as a retail or employment center, with service no less frequent than 5 rides per weekday peak period. Guarantee service for at least one year. (3 points)

#### **Submittals**

Provide the following:

- 1) Provide the LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) (A) a brief narrative describing the type, cost, number, methods of distribution and publicizing the availability of transit passes;  
OR  
(B) a site plan, vicinity map, and schedule indicating the provision of the new transit service provided as part of the project, AND a legally binding guarantee that such service will be provided for at least one year.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Transit Amenities** (1 Point)

#### **Intent**

Reduce energy consumption and pollution from motor vehicles by encouraging use of public transit.

#### **Requirements**

- (1) Provide covered and at least partially enclosed shelters, adequate to buffer wind, with at least one bench at each transit stop within the **project** boundaries.  
  
OR
- (2) Provide kiosks, bulletin boards, and/or signs devoted to providing local transit information as part of the project, including basic schedule and route information at each transit stop that borders or falls within the project.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating the location of all transit stops within the project boundaries; and
  - (A) and the location of shelters provided;  
OR
  - (B) the location of posted transit information.

#### **Notes**

Transit information posted might include, for example, a map of bus or rail routes that serve the project, a schedule of routes that serve the stop, and information regarding fare prices and how to purchase any necessary tickets, tokens, or passes.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Access to Nearby Communities** (1 Point)

#### **Intent**

Provide direct and safe connections, for pedestrians and bicyclists as well as drivers, to local destinations and neighborhood centers. Promote public health by facilitating walking and bicycling.

#### **Requirements**

- (1) Design and build **project** such that there is at least 1 through-street every 1/6 mile. This does NOT include connections that cannot physically be made; e.g. wetlands, rivers, railroads, extreme topography, natural gas lines, pipeline easements, highways, expressways and other limited-access roads.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating where project streets connect to existing neighboring streets.

## **COMPACT, COMPLETE & CONNECTED NEIGHBORHOODS**

### **Credit: Adaptive Reuse of Historic Buildings** (1 to 2 Points)

#### **Intent**

Encourage use of historic buildings in a manner that preserves their historic materials and character.

#### **Requirements**

- (1) Incorporate into the **project** one or more buildings that have been designated, listed or identified as
  - “historic” by a local government or locally recognized historic preservation organization  
OR
  - a “contributing building,” in a state historic register or on the National Register of Historic Places, or as a National Historic Landmark building or district or as a nationally significant building or district by the state.-

AND

Rehabilitate the building(s), ensuring that each building complies with local or federal standards for rehabilitation, as follows:

- Obtain confirmation from the municipality, and/or the local historic preservation commission that the building(s) meet the local standards for an historic rehabilitation. (1 point)  
OR
- Comply with the Secretary of the Interior’s “Standards for Rehabilitation.” (2 points)

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met, and
- 2) a document from the local government, locally recognized historic preservation organization, the State Historic Preservation Officer, or the National Park Service stating the name and address of the property, its historic designation or status, and the date of designation (a copy of the notice in the *Federal Register* or a verifiable copy of the web page of a state or national register that demonstrates the designation are acceptable documents) and
- 3) A) A document from the municipality, and/or the local historic preservation commission stating that the building(s) has complied with local

requirements for a historic rehabilitation, including the name and address of the property(ies), and the date compliance was determined;

OR

- B) A document from the State Historic Preservation Officer or the National Park Service, stating that the building(s) has complied with the Secretary of the Interior's "Standards for Rehabilitation," including the name, and address of the certified property(ies) and the date compliance was determined.



## **RESOURCE EFFICIENCY**

### **Credit: Certified Green Buildings** (1 to 5 Points)

#### **Intent**

Encourage the design and construction of buildings to utilize green building practices.

#### **Requirements**

- (1) Design, construct, or retrofit one building as part of the **project** to be LEED certified under one of the other LEED building-centric rating systems: LEED-NC (New Construction), LEED-EB (Existing Buildings), LEED-H (Homes), LEED-CS (Core & Shell). (1 point)  
AND  
Stipulate in deed restrictions, **CC&Rs**, or other binding development documents, showing that the requirement will be in force in perpetuity.

Additional points for percentages of LEED-certified buildings is available as follows:

Percent of project's buildings LEED certified	Points
20%	2
30%	3
40%	4
50%	5

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a site plan indicating which building(s) will be built to be LEED certified and under which rating system; and
- 3) a copy of the deed restriction, CC&Rs, jurisdictional ordinance or code, or other binding development documents.

## **RESOURCE EFFICIENCY**

### **Credit: Energy Efficiency in Buildings** (1 to 3 Points)

#### **Intent**

Encourage the design and construction of energy efficient buildings to reduce air, water, and land pollution and environmental impacts from energy production and consumption.

#### **Requirements**

- (1) Design and construct all buildings in the **project** such that they meet one of the following requirements according to the appropriate category:

Category 1: For non-residential buildings and residential buildings over 3 stories, establish the budget based upon a design of 15% below ASHRAE/IESNA Standard 90.1 - 1999 or 15% below the local energy code, whichever is more stringent.

Category 2: For residential buildings 3 stories or fewer, establish the budget based upon complying with Energy Star requirements.

AND

Stipulate in deed restrictions, **CC&Rs**, or other binding development documents, showing that the requirement will be in force in perpetuity. (1 point)

OR

- (2) Achieve 10% additional energy savings beyond the relevant standard set forth above, and stipulate corresponding provisions in binding development documents. (2 points)

OR

- (3) Achieve 20% additional energy savings beyond the relevant standard set forth above and stipulate corresponding provisions in binding development documents. (3 points)

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a copy of the deed restriction, CC&Rs, jurisdictional ordinance or code, or other binding development documents.

***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Water Efficiency in Buildings** (1 to 2 Points)

#### **Intent**

Encourage the design and construction of water efficient buildings to reduce the environmental impacts from water consumption.

#### **Requirements**

- (1) Design and construct all buildings in the **project** such that each uses 20% less water than the water use baseline set forth in the Energy Policy Act of 1992, or the local code, whichever is more stringent.

AND

Stipulate in deed restrictions, **CC&Rs**, or other binding development documents, showing that the requirement will be in force in perpetuity. (1 point)

OR

- (2) Achieve 30% water use reduction beyond the relevant standard set forth above, and stipulate corresponding provisions in binding development documents. (2 points)

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a copy of the deed restriction, CC&Rs, jurisdictional ordinance or code, or other binding development documents.

#### ***Rationale***

This also helps to minimize the burden on municipal utility resources.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Heat Island Reduction** (1 Point)

#### **Intent**

Reduce heat island effect to minimize impact on microclimate, human and wildlife habitat, and required energy for cooling.

#### **Requirements**

- (1) For shared portions of the **project** or public or common areas,
  - provide shade (within 5 years) and/or use light-colored/high-albedo materials with a reflectance of a least 0.3 and/or open grid pavement for at least 30% of non-roof impervious surfaces, including streets, parking lots, walkways, plazas, etc.;
  - OR
  - place a minimum of 50% of parking spaces underground or covered by structured parking;
  - OR
  - use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the streets and parking lot areas;
  - AND
  - stipulate in **CC&Rs** or other binding documents that non-roof heat island requirements will be met for each development phase.
- OR
- (2) For non-shared portions of the project,
  - provide shade (within 5 years) and/or use light-colored/high-albedo materials (reflectance of a least 0.3) and/or open grid pavement for at least 30% of non-roof impervious surfaces, including streets, parking lots, walkways, plazas, etc.;
  - OR
  - place a minimum of 50% of parking spaces underground or covered by structured parking;
  - OR
  - use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the streets and parking lot areas;

AND

- stipulate in CC&Rs or other binding documents that non-roof heat island requirements will be met for each development phase.

OR

(3) For any project

- Use Energy Star® compliant (highly reflective) AND high emissivity roofing (emissivity of at least 0.9 when tested in accordance with ASTM 408) for a minimum of 75% of the roof surface of all buildings within the project;

OR

- install a “green” (vegetated) roof for a least 50% of the roof area of all buildings within the project. Combinations of high albedo and vegetated roof can be used providing they collectively cover 75% of the roof area of all buildings.

AND

- Stipulate in CC&Rs or other binding documents that roof heat island requirements will be met for each development phase.

### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) A) For compliance paths 1 or 2,
  - 1) a site plan to demonstrate areas of paving, landscaping (list plant species), and building footprint; and
  - 2) a copy of the CC&Rs or other binding documents; and
  - 3) the applicable information of the following:
    - i) the percentage of non-roof impervious surfaces areas constructed with high-albedo materials - and/or open grid pavement and/or that will be shaded within five years;
    - ii) the percentage of parking spaces underground or covered by structured parking; and/or
    - iii) the percentage of streets and parking lot areas constructed with an open-grid pavement system (less than 50% impervious).

OR

- B) For compliance path 3,
  - i) a site plan indicating the size and location of high emissivity and/or vegetated roofs; and
  - ii) a copy of the CC&Rs or other binding documents.

***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

***Notes***

Heat island effect is characterized by thermal gradient differences between developed and undeveloped areas.

## **RESOURCE EFFICIENCY**

### **Credit: Infrastructure Energy Efficiency (1 Point)**

#### **Intent**

Reduce air, water, and land pollution from energy consumption.

#### **Requirements**

- (1) For common or public amenities (street lights, lift stations, traffic lights), design or purchase equipment to comply with the appropriate equivalent of ASHRAE/IESNA Standards or the local energy code, whichever is more stringent.

OR

- (2) For common or public amenities, benchmark energy use of conventional equipment and reduce consumption by 15%.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a calculation showing that the equipment complies with, or has reduced energy use to 15% of energy use required by, the applicable ASHRAE/IESNA standard, local energy code, or benchmark; and
- 3) if a local energy code is applied, demonstrate that the local code is equivalent to, or more stringent than ASHRAE/IESNA.



## **RESOURCE EFFICIENCY**

### **Credit: On-Site Power Generation** (1 Point)

#### **Intent**

Reduce air, water, and land pollution from energy consumption and production by increasing the efficiency of the power delivery system. Increase the reliability of power.

#### **Requirements**

- 1) Develop or incorporate into future **project** build out through **CC&Rs** or other binding documents, on-site source(s) of power generation sufficient to meet at least 5% of the energy needs of all building uses and commonly owned infrastructure in the project.

Base energy demand is based on the allowable entitled area for the project, according to the following categories:

**Category 1:** For non-residential buildings and residential buildings over 3 stories, establish the budget based on a design of 15% below ASHRAE/IESNA Standard 90.1 - 1999 or 15% below the local energy code, whichever is more stringent.

**Category 2:** For residential buildings 3 stories or fewer, establish the budget based on compliance with Energy Star requirements.

Calculations for total on-site energy can include future site or building-integrated systems stipulated through CC&Rs or other binding documents.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a narrative describing the on-site power generation systems; and
- 3) calculations demonstrating the percentage of the project's total energy demand supplied by the on-site power generation system(s); and
- 4) a copy of any CC&Rs or other binding documents.

## **RESOURCE EFFICIENCY**

### **Credit: On-Site Renewable Energy Sources** (1 Point)

#### **Intent**

Reduce environmental impacts associated with fossil fuel energy generation by increasing the use of on-site renewable energy sources.

#### **Requirements**

- (1) Design and specify, or incorporate into future **project** build-out through **CC&Rs** or other binding documents, the use of shared on-site nonpolluting renewable energy generation technologies such as solar, wind, geothermal, low-impact hydroelectric, and biomass to supply at least 5% of the total energy used by all building uses and commonly owned infrastructure in the project.

Base energy demand is based on the allowable entitled area for the project, according to the following categories:

**Category 1:** For non-residential buildings and residential buildings over 3 stories, establish the budget based on a design of 15% below ASHRAE/IESNA Standard 90.1 - 1999 or 15% below the local energy code, whichever is more stringent.

**Category 2:** For residential buildings 3 stories or fewer, establish the budget based on compliance with Energy Star requirements.

Calculations for total on-site energy can include future site or building-integrated systems stipulated through CC&Rs or other binding documents.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a narrative describing the on-site renewable power generation systems; and
- 3) calculations demonstrating the percentage of the project's total energy demand supplied by the on-site renewable power generation system(s); and
- 4) a copy of any relevant CC&Rs or other binding documents.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Efficient Irrigation** (1 Point)

#### **Intent**

Conserve potable water.

#### **Requirements**

- (1) For common or public landscaped areas, reduce potable water consumption for irrigation, except for initial watering to establish plants, by at least 50% compared to conventional means through native plant selection, high-efficiency irrigation technology, rainwater harvesting and/or **greywater** systems;  
AND  
stipulate **CC&Rs** or other binding documents to insure future compliance by building owners-

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a calculation of the percentage potable water consumption for site irrigation has been reduced; and
- 3) a brief narrative of the equipment and/or plant selection; and
- 4) a copy of the CC&Rs or other binding documents.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Greywater & Stormwater Reuse** (2 Points)

#### **Intent**

Conserve potable water.

#### **Requirements**

- (1) For common and public areas, design and construct **greywater** and/or stormwater systems to capture and reuse at least 50% of greywater and stormwater,  
AND
- (2) stipulate **CC&Rs** to mandate this over time.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a calculation showing the percentage of greywater and stormwater captured and reused; and
- 3) a brief narrative of the equipment used; and
- 4) a copy of the CC&Rs or other binding documents.

## **RESOURCE EFFICIENCY**

### **Credit: Wastewater Management** (1 Point)

#### **Intent**

Reduce pollution from wastewater and reuse nutrients from the wastewater stream.

#### **Requirements**

- (1) Design and construct shared infrastructure as part of the **project** to reprocess at least 50% of the organic wastes generated by the project into useful nutrient sources. Isolate these wastes and prevent toxic contributions to the designated wastewater stream.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a narrative describing the infrastructure and reuse of processed nutrient sources.

## **RESOURCE EFFICIENCY**

### **Credit: Reuse of Materials** (1 Point)

#### **Intent**

Promote reuse of materials and resources.

#### **Requirements**

- (1) Use salvaged, refurbished, or reused materials for at least 5% of all materials in new shared infrastructure such as sidewalks, roads, grading subbase, paving, curbs and sewers.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a list of each salvaged, refurbished, or reused material used, and a calculation of the percentage of the total materials used constituted by each.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Recycled Content** (1 Point)

#### **Intent**

Promote use of recycled materials.

#### **Requirements**

- (1) Build *common and public* infrastructure such as sidewalks, roads, grading subbase, paving, curbs, and sewers using materials with recycled content such that the sum of post-consumer recycled content plus one-half of the post-industrial recycled content constitutes at least 5% of the total value of the materials (1 point)  
OR
- (2) or at least 10% of the total value of the materials (2 points).

The value of the recycled content portion of a material shall be determined by dividing the weight of recycled content in the item by the total weight of all material in the item, then multiplying the resulting percentage by the total value of the item. Mechanical and electrical components shall not be included in this calculation. Recycled content materials shall be defined in accordance with the Federal Trade Commission document, *Guides for the Use of Environmental Marketing Claims*, 16 CFR 260.7 (e).

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a list of the recycled content materials used and a calculation of the percentage of the total each constitutes.

#### **Sources & Resources**

This credit was adapted from LEED-NC 2.1.

*Guides for the Use of Environmental Marketing Claims*, 16 CFR 260.7 (e), available at [www.ftc.gov/bcp/gmrule/guides980427.htm](http://www.ftc.gov/bcp/gmrule/guides980427.htm).]

## **RESOURCE EFFICIENCY**

### **Credit: Regionally Provided Materials** (1 Point)

#### **Intent**

Promote selection of regionally available materials and resources to build local economy and reduce embodied energy.

#### **Requirements**

- (1) Build common and public infrastructure such as sidewalks, roads, grading subbase, paving, curbs, and sewers using a minimum of 20% of materials that are manufactured, extracted, harvested or recovered within a radius of 500 miles of the **project**.

Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the tradesmen. For example, if the hardware for a joist comes from Dallas, Texas and the lumber from Vancouver, British Columbia, but the joist is assembled in Kent, Washington, then the location of the final assembly is Kent, Washington.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a list of the locally provided materials used and distance from project to manufacturer; and
- 3) a calculation of the percentage of the total each constitutes.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.



## **RESOURCE EFFICIENCY**

### **Credit: Construction Waste Management (1 Point)**

#### **Intent**

Promote efficient use of solid waste by diverting construction, demolition and land clearing debris from landfill disposal, and by redirecting resources for recycling and reuse.

#### **Requirements**

- (1) Develop and implement a construction waste management plan that quantifies material diversion goals and the procedures for achieving them  
AND
- (2) Recycle and/or salvage construction, demolition and land clearing waste generated through infrastructure development and construction of public or common amenities such that either
  - (A) 50% of these wastes are diverted from landfills,  
OR
  - (B) 25% of these wastes are recycled or reused on-site.

Calculations can be done by weight or volume, but must be consistent throughout and cannot include earth moving. Hazardous substances, pollutants and contaminants that are removed from the site as part of a sanctioned remediation process are excluded from the calculation.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met;
- 2) and a tabulation of the total waste material by weight or volume, quantities diverted and the means by which diverted, or the quantities recycled or reused on-site.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Comprehensive Waste Management** (1 Point)

#### **Intent**

Promote safe and efficient disposal or reuse of waste streams generated by occupants.

#### **Requirements**

- (1) Include the following as part of the **project**:
  - (A) at least one drop-off point available to all project occupants for office or household hazardous wastes such as paints, solvents, oil, batteries.  
OR  
locate project in a municipality that provides services for collecting these materials;  
AND
  - (B) at least one recycling or reuse station available to all project occupants dedicated to the separation, collection, and storage of materials for recycling including, at a minimum, paper, corrugated cardboard, glass, plastics and metals  
OR  
locate project in a municipality that provides recycling services for these materials;  
AND
  - (C) at least one compost station available to all project occupants dedicated to the collection and composting of food wastes.  
AND
  - (D) publicize the availability and benefits of these drop-off point(s), station(s), or services.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met, and
- 2) a brief narrative regarding the methods of publicizing the drop-off point(s), stations, or services; and

- 3) (A) a site plan indicating the location of relevant drop-off point(s) and stations and a brief narrative describing the management, hours or days of operation

OR

(B) written information regarding the schedule of services provided by the municipality.

***Rationale***

Safe disposal of household hazardous materials such as paints, solvents, and gasoline reduces stormwater pollution and groundwater contamination.

***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **RESOURCE EFFICIENCY**

### **Credit: Light Pollution Reduction** (1 Point)

#### **Intent**

Reduce light pollution.

#### **Requirements**

- (1) For shared portions of the **project**, design exterior lighting to meet or provide lower light levels and uniformity ratios than those recommended by the Illuminating Engineering Society of North America (IESNA) *Recommended Practice Manual: Lighting for Exterior Environments* (RP-33-99);  
AND  
Design exterior lighting such that all exterior luminaires with more than 1000 initial lamp lumens are shielded and all luminaires with more than 3500 initial lamp lumens meet the Full Cutoff IESNA Classification;  
AND  
Stipulate **CC&Rs** or other binding documents that require continued adherence to these standards.

#### **Submittals**

Provide the following:

- 1) The LEED Letter Template, signed by the responsible party, declaring that the requirements have been met, including a brief narrative that explains what measures have been implemented; and
- 2) a site plan that indicates where the shared portions and associated exterior lighting is located; and
- 3) a copy of the CC&Rs or other binding documents.

#### ***Notes & Questions***

Need to ensure that this does not come at the expense of a safe-feeling nighttime pedestrian environment.

#### ***Sources & Resources***

This credit was adapted from LEED-NC 2.1.

## **LOCATION EFFICIENCY**

### **Credit: Contaminant Reduction in Brownfields Remediation (1 Point)**

#### **Intent**

Encourage brownfields cleanup methods that reduce contaminant volume or toxicity and thereby minimize long-term remediation or monitoring burdens.

#### **Requirements**

- (1) Earn the Contaminated Brownfields Redevelopment credit,  
AND  
Use cleanup method(s) that treat, reduce or eliminate the volume or toxicity of contaminated material found on the site.

Cleanup methods which include only capping or translocation of contaminated material to an off-site location will not achieve this credit.

#### **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a narrative or site/technical drawings demonstrating the cleanup methods used.

#### ***Notes & Questions***

See USEPA's Hazardous Waste Cleanup Information webpage for information on innovative treatment and site characterization technologies: <http://www.clu-in.org/>  
Innovative technology goes above and beyond containment, capping, pump and treat, incineration, and off-site disposal.

## **PLACEHOLDER FOR ANTICIPATED CREDITS**

### *Accredited Professional Credits*

The LEED-ND Core Committee is considering having at least one credit (worth at least one point) available for the inclusion on the project team of a LEED Accredited Professional or other professional with specific credentials that would be particularly relevant and helpful to a project team hoping to achieve LEED-ND certification.

For the purposes of the “Point Overview” at the beginning of this document, we have assumed two points for Accredited Professionals points would be available.

### *Innovation Credits*

The LEED-ND Core Committee anticipates having a number of “Innovation” credits available, similar to other LEED rating systems. Project teams could potentially earn a limited number of such credits based on innovative designs, approaches, measures taken, technologies used, etc. that help meet the overall goals of LEED-ND but are not specifically credited in the LEED-ND Rating System.

For the purposes of the “Point Overview” at the beginning of this document, we have assumed four Innovation points would be available.

## DEFINITIONS

**Adequate transit service** - Adequate bus or light rail service is defined as at least four buses or trains per hour during **peak periods**. (See definition below) Adequate heavy rail or ferry service is defined as at least 5 trains or ferries per weekday **peak period**.

**Adjacent** - Having at least 25% of the perimeter bordering something else.

**Adjacent sites** have 25% of their perimeter bordering land that has been **previously developed**. (See definition below. Compare also to **infill site**, below.)

**Area median income** – Determined for each county and available from the U.S. Department of Housing and Urban Development.

**Buildable land** - when used in density calculations, excludes:

- Public streets and other public rights of way
- Land occupied by nonresidential structures
- Land excluded from residential development by law or other prerequisites of LEED-ND.

**CC&Rs** - Codes, Covenants, & Restrictions.

**Development footprint** - The entire building footprint, access roads and parking areas.

**FAR** – Floor Area Ratio.

**Greywater** – Defined by the Uniform Plumbing Code (UPC) as “untreated household waste water which has not come into contact with toilet waste. Grey water includes used water from bathtubs, showers, bathroom wash basins, and water from clothes-washer and laundry tubs. It shall not include waste water from kitchen sinks or dishwashers.” Some states and local authorities allow kitchen sink wastewater to be included in greywater. Project teams should comply with greywater definitions as established by the authority having jurisdiction in their areas.

**Infill site** - A site having at least 75% of its perimeter bordering land that has been **previously developed**. (See definition below. Compare also to **adjacent site**, above.).

**In-holding** - a privately owned parcel of land within the boundaries of a public preserve, especially within a national park or national seashore (American Heritage)

**Peak periods** – 5:30 a.m. to 10:30 a.m. and 3:30 p.m. to 8:30 p.m.

**Previously developed** - Having pre-existing paving, construction, or altered landscapes. Land that is currently in agricultural use, forestry use, or is a preserved natural area is not considered previously developed.

**Previously developed sites** have at least 75% land which has been **previously developed**.

**Pre-project** – Before the current LEED-ND applicant project was initiated, but (if the land was developed or altered for a previous use) not before any development or alteration took place. Describes conditions on the site as the current developer found them.

**Prime soils** - soils with chemical, hydrographic and topological properties that make them especially suited to the production of crops. The Natural Resources Conservation Agency is responsible for identifying prime soils, and they make detailed soil surveys and maps available for every county in the United States. All of the NRCS data are available for download to GIS mapping programs.

**Project** - The land and construction that constitutes the basis for LEED-ND application.

**Post-project** – After the current LEED-ND applicant project is completed.

**TND** - Traditional Neighborhood Design/Development

**Use type** - individual use types include residential, retail, office. “Commercial” is not a single use type.

**Unique soils** – soils with chemical, hydrographic and topological properties that make them especially suited to specific crops. The Natural Resources Conservation Agency is responsible for identifying unique soils, and they make detailed soil surveys and maps available for every county in the United States. All of the NRCS data are available for download to GIS mapping programs.

**Wetlands** - defined by the 1987 Army Corps of Engineers Manual: “Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” <http://www.wetlands.com/regs/tlpge02e.htm>

**Walking distance** - the distance that a pedestrian must travel between destinations without obstruction, in a safe and comfortable environment such as on sidewalks, footpaths or other pedestrian facilities.

**VMT** - vehicle miles traveled.



## APPENDIX A: Sample "LEED Letter Template" from the existing LEED for New Construction Rating System

### EA Credit 2: Renewable Energy

**Declaration not made**

(Owner, Architect, HVAC Engineer or Responsible Party)

I, \_\_\_\_\_, declare that at least 5% of the building's energy is provided by on-site renewable energy supply.

I have provided the following to support the declaration:

☐ a narrative describing on-site renewable energy systems installed in the building

AND

☐ the calculations below demonstrating that the declared percentage of total energy costs are supplied by the renewable energy systems.

**Regulated Systems Energy Use**

Energy Type	Annual Use [10 <sup>3</sup> Btu]	Annual Cost [\$]	Energy Supplied [%]
			0.00%
			0.00%
			0.00%
			0.00%
			0.00%
<b>Total Non-Renewable</b>	0	0	0.00%

**Renewable Energy**

Energy Type	Annual Use [10 <sup>3</sup> Btu]	Annual Cost [\$]	Energy Supplied [%]
			0.00%
			0.00%
			0.00%
			0.00%
			0.00%
<b>Total Renewable</b>	0	0	0.00%
<b>Total Energy Use</b>	0	0	0.00%

**Points Documented**

EA Cr 2.1 (1 possible point): Renewable Energy >= 5%

0

EA Cr 2.2 (1 additional point): Renewable Energy >= 10%

0

EA Cr 2.3 (1 additional point): Renewable Energy >= 20%

0

**Total Points Documented**

0

Name: \_\_\_\_\_ #N/A

Organization: \_\_\_\_\_ #N/A

Role in project: \_\_\_\_\_ #N/A

Signature: \_\_\_\_\_

Date: \_\_\_\_\_ 9/1/2005

File last modified: August 1, 2005

**APPENDIX B: List of LEED-ND Core Committee Members  
as of September 7, 2005**

Kaid Benfield – Natural Resources Defense Council (Vice-Chair)  
Victor Dover – Dover Kohl & Partners Town Planning  
Doug Farr – Farr Associates Architecture and Urban Design (Chair)  
Rebecca Flora – Green Building Alliance  
Sharon Feigon, Center for Neighborhood Technology  
Bert Gregory – Mithun Architects + Designers + Planners  
Daniel Hernandez – Topology, LLC  
Jessica Millman – Coalition for Smarter Growth  
Susan Mudd – Board of Directors for the Congress for the New Urbanism  
John Norquist – Congress for the New Urbanism  
Michael Pawlukiewicz – Urban Land Institute  
Tom Richman, Catalyst  
Elizabeth Schilling – Growth Management Leadership Alliance  
Laura Watchman, Defenders of Wildlife  
Sandy Wiggins – Consilience, LLC